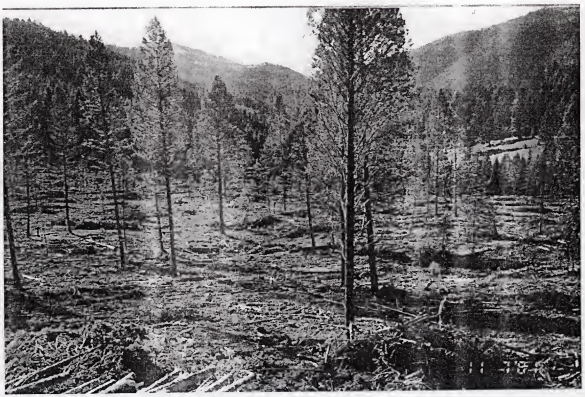
KING HARVEY

ENVIRONMENTAL ASSESSMENT



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1.0 PURPOSE AND NEED

1.1 PROPOSED ACTION

The Department of Natural Resources and Conservation (DNRC), Southwestern Land Office, Anaconda Unit, proposes to harvest timber from State owned School Trust Lands in parts of four sections, South and West of Drummond, MT. The proposed project area encompasses 2,560 acres within Section 16, T9N, R14W (Silver King); Sections 16 and 36, T10N, R14W (Harvey Ridge and Nirling Hill, respectively); and Section 36, T11N, R14W (Antelope) located in Granite County. The proposal would target approximately 830 acres, within portions of those sections, for harvest. A vicinity map indicating the general location of the proposed project area is shown in Appendix A-1.

If an action alternative were selected, two sales would be sold from this EA. Depending on constraints, they would be sold between 2002 and 2004. The individual sale contracts would last three years from the starting date. Associated hazard reduction and site preparation work could continue for up to two additional years.

1.2 PURPOSE AND NEED FOR ACTION

The lands involved in this proposed project are held by the State of Montana in trust for the support of beneficiary institutions such as public schools, state colleges and universities, and other specific state institutions such as the School for the Deaf and Blind (Enabling Act of February 22, 1889; 1972 Montana Constitution, Article X, Section 11). The Board of Land Commissioners and the Department of Natural Resources and Conservation are required by law to administer these trust lands to produce the largest measure of reasonable and legitimate return, over the long run, for these beneficiary institutions (Section 77-1-202, MCA). The Board and the Department have broad discretion as to the best way to satisfy this legal mandate, subject to applicable state and federal law. For the lands involved in this project, the Department believes that management for timber is the best way to satisfy this legal mandate for the foreseeable future.

Most of the stands involved in this sale are mixed Douglas-fir and Ponderosa pine in the sawlog size class. In addition, there are some patches of pole sized Douglas-fir. Most of the existing regeneration is badly suppressed and of poor form and vigor.

Increased fuel loading and ladder fuels resulting from tree mortality and in-growth are contributing to the possibility of a fire event that may be of greater intensity and extent than occurred historically. This type of fire event could lead to elimination of important historic characteristics of the site (e.g. old growth Ponderosa pine) and other adverse effects such as loss of soil productivity through erosion. The heavy stocking levels of Douglas-fir are causing stress in the Ponderosa pine and increasing the incidence of Western and Mountain Pine Beetle attacks as several pockets of beetle killed trees were noted on all sections except Nirling Hill.

Proposed harvesting would thin overstocked stands, increase growth rates of the retention trees, return revenue to the school trust, potentially lower wildfire intensities, should a wildfire occur, and allow for enhanced regeneration of Ponderosa pine through careful tree selection and site preparation.

1.3 Proposal Objectives

In order to meet the goals of the management philosophy adopted through programmatic review in the State Forest Land Management Plan, the Department has set the following specific project objectives:

a. **Harvest 3.4 to 5.0 MMBF of timber to provide continuing income for the Montana School Equalization Account in a manner consistent with sustained-yield management principles.**

In 1995, The Montana Legislature passed House Bill 201, which established a DNRC sustained yield annual timber harvest mandate. This law was codified at 77-5-221 through 223. This project would contribute an estimated $800,000 income and assist to meeting the mandate.

b. **Promote long-term production of timber for generating revenue to the Montana School Equalization Account.**

The silvicultural treatments proposed for all action alternatives are uneven-aged management, individual tree selection and commercial thinning prescriptions designed to emulate a low-intensity, mixed severity fire regime. Emphasis would be placed on promoting tree vigor while maintaining structural and species diversity, encouraging Ponderosa pine regeneration, and regenerating other seral species such as aspen, willow, shrub and herbaceous species. The proposed treatment would move the stands towards expected historical conditions and species distribution.

c. **Maintain the DNRC ownership in an ecological condition which is sustainable and provides for a wide variety of resources to generate future income .**

Improvement of existing roads to reduce sediment delivery to streams, retention of coarse woody debris for nutrient cycling and development of stand conditions that would increase growth rates and help to maintain and improve resource conditions in the area. Retaining trees in all diameter classes would provide vertical structure and species diversity. Ponderosa pine regeneration would be encouraged and stand productivity would be improved. Increased levels of aspen, willow, shrubs and herbaceous species could occur after harvesting, enhancing species diversity and abundance.

d. **Return the stands to stocking levels and fuel loads closer to historical levels and creating healthier stands.**

The majority of the stands historically were comprised of Ponderosa pine. Due to past harvesting and elimination of natural fire, stocking levels of Douglas-fir has greatly increased and is believed to be causing stress, mortality and decline in forest health.

1.4 Scope of This Environmental Analysis

1.4.1 History of the Planning and scoping process

Comments from the general public and specialists (from inside and outside DNRC) were solicited as part of this EA (List located in project file). Public notices were posted in the Hall Post Office, Drummond Wagon Wheel Cafe and Philipsburg Sunshine Station. A legal notice was placed in the weekly Philipsburg Mail (October 4, 1999).

1.4.2 Related EA's, EIS's, and Other Relevant Documents

In June 1996, DNRC began a phased-in implementation of the State Forest Land Management Plan (SFLMP). The SFLMP established the agency's philosophy for the management of forested trust lands. The management

direction provided in the SFLMP comprises the framework within which specific project planning and activities take place.

The plan also defines the Resource Management Standards, which guided the planning of this proposed action. The SFLMP philosophy and appropriate resource management standards have been incorporated into the design of the proposed action.

Other local, state, or federal agencies that have jurisdiction or review responsibility are listed below:

-MT Dept. of Fish, Wildlife and Parks	124 permit
-MT Dept.of Natural Resources and Conservation	SMZ Law Compliance
-MT Dept.of Environmental Quality	Open Burn. Regs., 3A Permit

1.4.3 Identified Issues and Concerns

Issues were identified from concerns and comments expressed by individuals, special interest groups, and internal and external agency specialists. External comments were received from The Ecology Center and Dan Hook, Biologist, Department of Fish, Wildlife and Parks.

The comments received were developed into the issues and concerns that are analyzed in this assessment. These are not listed in order of importance.

1.4.3.1 Issues studied in Detail (carried into Chapters 3 and 4)

1. Concern of possible impacts to Threatened, Endangered and Sensitive Species.

The habitat potential for threatened and endangered species on these parcels are low due to the isolated nature of the sections. The Montana Natural Heritage Program was contacted for information regarding species occurrence in the vicinity of the project area. Data indicated a Bald Eagle nesting approximately three miles from the Antelope section and five miles from the Harvey Ridge section. Their report is located in the project file. This issue will be addressed further in chapters 3 and 4.

2. Concern that the proposed action may cause stream sedimentation, which could adversely affect water quality.

The primary risk to water quality is associated with roads, especially roads constructed along or across streams. Improvements to the existing road system proposed under the action alternative would benefit long term water quality and watershed conditions in all of the affected watersheds. Proposed timber sales include approximately 2.6 miles of new road. 1 mile of "temp" road and 13 miles of maintenance. Existing roads, which access the sale area are located on private land, are generally in poor condition and do not meet Best Management Practices (BMP's). Improvements designed to reduce, eliminate or mitigate water quality impacts from the existing road system are planned under the action alternative. Partial relocations, installation of surface drainage features and additional mitigation measures (i.e. slash filter windrows) are planned to bring the roads up to standards which fully comply with BMPs.

The existing road system contains few stream crossing sites. Generally, these crossings are poorly designed and are not adequately maintained. Some of the existing stream crossings are functioning well, but lack the appropriate level of mitigation, which could further reduce potential sediment delivery.

DNRC would utilize BMP's, mitigation and erosion control practices during the design, reconstruction and construction of all roads, streams and draw crossings. Replacement and repair of failed or unstable stream crossings as well as improvements to the existing road system are expected to result in long term improvements to downstream water quality and additional protection of beneficial uses in all of the affected watersheds. There is little risk of adverse impacts to beneficial uses occurring as a result of the proposed action. This issue will be further addressed in chapters 3 and 4.

3. **Concern that the proposed action may adversely affect bull trout and Westslope Cutthroat.**

The Silver King section and the Antelope section are the only sections that have SMZ's present. The Silver King Section is drained by Cottonwood Creek, which flows into the South Fork of Lower Willow Creek. Fisheries surveys were completed in the South Fork of Lower Willow Creek, by the Deerlodge National Forest, in 1993 and by the Department of Fish, Wildlife and Parks in 1996. Antelope Creek was surveyed, by the DFWP in 1988. Bull Trout were absent in all surveys. The surveys did indicate presence of Westslope Cutthroat that were believed to be genetically pure. This issue will be analyzed further in chapters 3 and 4.

4. **Concern that timber harvest will not consider the recruitment of future old growth. Nor will old growth be protected.**

Although no old growth is being entered, residual stands will more closely resemble pre-fire suppression conditions which includes maintenance of large trees, snags and coarse woody debris often associated with old growth, this issue will be analyzed further in Chapters 3 and 4.

5. **Concern that timber harvesting might adversely impact winter big game populations through loss of thermal cover, security cover and movement corridors.**

All the sections provide big game winter range and thermal cover (Dan Hook DFWP biologist 10/19/99 memo). Presently, the Harvey ridge parcel provides the only Elk security cover as defined by Hillis et al. 1991. Elk Security (Hillis et. al. 1991) on the other parcels is limited by either small patch size or proximity to open roads. Forested patches would be retained in their current relative size but they would be thinned. This issue will be addressed further in chapters 3 and 4.

6. **Concern about cumulative effects of the proposed action.**

Cumulative impacts may occur with successful implementation of the proposed project. Cumulative effects for each resource will be addressed in chapters III and IV by specialist input.

1.4.4 Issues Eliminated From Detailed Study

1. Concern that the proposed actions may cause soil impacts and affect soil productivity, such as: mass movement in unstable soils, increased soil erosion rates, and increase soil compaction or disturbance.

No areas of soil instability were identified. Slopes in the project area are generally less than 30%. No ground skidding would occur on slopes greater than 45%. Harvest areas greater than 45% slope would be restricted to winchline skidding to approved trails. Harvesting would use BMP's as the minimum guidelines and incorporate mitigation measures identified in the soils report (Jeff Collins, project file

5/15/00 memo). Mitigation measures would include skid trail planning in sensitive areas, rehab (i.e. waterbar, slash, reseeding). Landings and heavily used skid trails would have adequate drainage installed and be re-seeded with an approved mix of weed free seed. To minimize the area and degree of soil effects the following mitigation measures would be implemented: Skidding restricted to dry (soil moisture <20% at 6") or frozen conditions and a March 1- June 1 seasonal restriction. In addition, coarse woody debris and fines would be retained throughout the harvest units to further reduce soil effects and provide for nutrient cycling.

2. Concern that the proposed actions may impact sensitive plant species.

Plant surveys were conducted by Lisa Schassberger (private consultant). Her Report found two species of concern. *Chrysosplenium tetandrum* (Northern Golden-carpet) was identified along Cottonwood Creek in the Silver King section. An unidentifiable species of *Lesquerella* was found in the Nirling Hill section. These plants are not currently listed on the sensitive plant list but are designated as plants of special concern by the Montana Natural Heritage Program. The harvest proposal would selectively remove approximately 10% of the timber in the Cottonwood creek SMZ. The trees removed would be only those in the outer ½ (25-50 ft.) of the SMZ. *Chrysosplenium* generally occurs immediately adjacent to water (Jeff Collins, DNRC Soil Scientist). Because no streambank trees would be removed, and approximately 10% of the trees would be harvested, negative impacts would not be anticipated. *Lesquerella* occurs on high ridges in the Nirling Hill section (Lisa Schassberger, private consultant, sensitive plant report). Some individual plants may observe short-term negative effects. Mitigations would be to restrict skidding on ridges to designated single trails (Jeff Collins, DNRC Soil Scientist, Memo May 19, 2000), thus localizing disturbance. Negligible impacts are expected to these plant populations.

3. Concern that the proposed harvest activities will not regenerate thus increasing the cost of the project and reducing the net return to the School trust.

The proposed treatments are generally light to moderate individual tree selection treatments and commercial thinnings. The site shows excellent potential for natural regeneration with some areas currently showing > 3000 seedlings per acre. A light understory burn and precommercial thinning may be utilized where possible to decrease competition for Ponderosa pine regeneration.

4. Concern about the possibility of future salvage sales in these areas as a result of the actions from this proposal.

The silvicultural prescriptions in the action alternative call for uneven-aged, individual tree selection methods with a leave tree basal area averaging 45-60 square feet/acre with some micro-sites ranging from 0-100 square feet/acre. Designated areas along ridges and openings would be left with heavier stocking to reduce the chances of blowdown timber and the necessity for subsequent salvage sales. If blowdown does occur and a salvage sale proposed, an appropriate level MEPA analysis would be conducted. The harvesting of some of the timber on the area would also tend to increase the vigor of the remaining stand, which could make the individual trees more resistant to insect or disease and reduce the chances of salvage logging due to these factors.

5. Concern that helicopter logging may adversely affect wildlife habitat, watersheds, fisheries, and trust income.

No helicopter logging is being considered with this action alternative.

6. Concern about noxious weed introduction on private and state land.

The potential weed introduction or spread in the project area would be mitigated through an Integrated Weed Management approach, including prevention, revegetation, and control. Contract specifications would require power washing and inspection of road building and harvesting equipment prior to moving the equipment onsite. Spot applications of herbicides for weed control in the project area would be conducted as needed.

7. Concern that timber harvest may have adverse impacts on other uses such as recreation, grazing, mineral exploration and future development opportunities.

Current commercial uses of the sale area include grazing leases on all four parcels. The proposed timber harvest would not have any long-term negative affect on the grazing leases or on any current or future mineral exploration. The proposed timber harvest would also ensure that potential future timber harvests could be available by maintaining sufficient overstory trees for regeneration purposes and protection of desirable regeneration during harvesting operations. Due to restricted access, cabin sites are unlikely at this time. Antelope and Harvey Ridge sections receive little hunting pressure outside of hunters with access from adjacent landowners. Silver King and Nirling sections are accessible by Block Management Areas. Harvesting in these sections may have short-term negative impacts to the quality of hunting due to temporary displacement. Mitigation measures would be to obstruct temporary and new roads with slash, earth berms, or gates. A visual buffer strip would be left along portions of some open roads. Other beneficial uses (i.e. grazing, mineral exploration) will not be measurably impacted.

8. Concern that roads will not be adequately maintained after the sale to ensure they will not result in adverse impacts to the environment.

Permanent roads located on State lands in the project area would be scheduled for maintenance commensurate with expected road use and appropriate resource protection. Maintenance on both open and closed roads would be monitored by direct inspections of road and drainage structures every five years. Maintenance operations would be scheduled based on the results of these inspections (MT-DNRC State Forest Land Management Plan 1996; Roads RMS 15 and 17).

1.5 Decisions to be Made From this Environmental Assessment

The following decisions are to be made as a result of this Environmental Assessment:

1. Do the alternatives presented meet the stated project objectives.
2. Which alternative should be selected.
3. Does the selected alternative have significant impacts on the environment.
4. Is there need for preparation of an EIS

2.0 Alternatives Including the Proposed Action

2.1 Introduction

Chapter 2: This chapter describes Alternative A: No-action and Alternative B: Action. Then based on the descriptions of the relevant resources in Chapter 3: Affected Environment and the predicted effects of all alternatives in Chapter 4: Environmental Consequences, this chapter presents the predicted effects of all alternatives on the quality of the human environment in comparative form, providing a clear basis for choice among the options for the decision maker and the public.

This chapter has four sections:

- Alternative design, evaluation and selection criteria
- Alternatives considered but eliminated from detailed study
- Detailed descriptions of the Alternatives
- Summary of the comparison of the Effects of all the alternatives

2.2 Alternative Design, Evaluation, and Selection Criteria.

In June 1996, the DNRC began a phased-in implementation of the State Forest Land Management Plan (SFLMP). The SFLMP established the agency's philosophy for the management of forested trust lands. The management direction provided in the SFLMP comprises the framework within which specified project planning and activities take place.

The plan also defines the Resource Management Standards (RMS) which guided the planning of the proposed action. The SFLMP philosophy and appropriate resource management standards have been incorporated into the design of the action alternatives.

2.3 Alternatives Considered but Eliminated from Detailed Study

There appear to be no alternatives that are realistically likely to offer an equivalent opportunity for the following reasons: 1.) Harvesting timber in all or parts of the described sections would generate substantial revenue for the school trust; 2.) This action would ensure that the long-term potential for harvesting timber from these sites would be enhanced by maintaining or improving current timber growth rates and improving the forage potential for grazing use; 3.) Since these particular trust lands are surrounded by private land and access is closely regulated, there is little potential for producing a great deal of revenue from recreational activities, or other approved trust land use present at this time. 4.) Revisions were made to the initial proposal to mitigate unresolved conflicts, which would have required additional alternatives or created greater impacts.

2.4 ALTERNATIVE DESCRIPTION

2.4.1 Alternative A: No Action

This alternative would not implement any of the land management activities proposed in this document. It would not exclude future activities such as timber harvest activities.

Alternative A would retain all current tree cover and would result in continued current tree growth, with declining individual tree growth and vigor expected. Seral species such as Ponderosa pine and aspen would continue to be reduced as Douglas-fir canopy cover increased. An increasing chance of a stand replacing wildfire, with subsequent loss of revenue to the school

trust, could also occur as ladder fuel loads increase. An increase in susceptibility to insect and disease outbreaks would also be expected.

No new roads would be built and existing substandard roads and drainage features would not receive remedial measures to decrease sediment delivery to watercourses.

Existing management activities (grazing leases, mineral exploration) would continue. Timber harvest revenues to the school trust associated with the no-action alternative would not be realized at this time.

2.4.2 Alternative B: Proposed Action

This alternative action would be comprised of two sales, selectively harvesting approximately ½ to 2/3 of the existing volume. Preliminary estimates are approximately 4 MMBF from approximately 830 acres. Road maintenance would be done on approximately 13 miles of existing road. Approximately 2.6 miles of new construction would be required to access the proposed treatment areas. Approximately 1 mile of temporary road would be built. Upon completion, portions of the temporary roads would be slashed, revegetated and reshaped to slope.

Harvesting would target the smaller diameter second growth trees with some larger, less healthy trees also designated for cutting. Historically, the sites would contain a higher proportion of Ponderosa pine than they do currently, but due to absence of fire the Douglas-fir makes up 85% of the stand. The existing pine are being out-competed for available nutrients. Retention of most larger diameter pine and fir would provide variable stand structure, snag recruitment, future nutrient cycling, and move the sites toward historic conditions. Maintenance, restoration and regeneration of Ponderosa pine would be a major goal of this alternative.

The action alternative would include reconstruction/reconditioning of access roads on private lands, which would reduce sediment delivery to stream courses in the project area. New road construction would be minimized, by using temporary roads, where possible. The following is a description of the proposal by section.

SILVER KING

The proposal for the Silver King section would harvest approximately 1.7 MMBF from three units totaling approximately 350 acres. Unit 1 harvest would be an uneven-aged, individual tree selection prescription designed to maintain the existing structural diversity, and emulate a low intensity ground fire that would have kept the stocking levels lower. The majority of the harvest would target the smaller diameter, intermediate, and suppressed Douglas-fir <18 inches D.B.H. Few Ponderosa pine would be harvested with no pine >21 inches D.B.H being targeted for removal. The harvest would remove 50-60% of the merchantable volume and retain an average basal area of 45-60 square feet per acre. Designated areas along openings, ridges and draws would be maintained in a heavier leave retention to provide overstory cover, minimize windthrow and facilitate movement for big game. See attachment A-6 for details on these areas.

Unit 2 harvest would be much of the same as unit 1 though the harvest would be slightly heavier due to the presence of Dwarf Mistletoe. There is a healthy sub-merch component present that would be protected. Approximately 60-70 percent of both the merchantable volume and basal area would be removed. The residual stand would average 30-40 square feet of basal area. An SMZ is present along the south side of Cottonwood creek. Few trees would be removed only in the outer ½ of this SMZ. Unit 3 is a south facing slope with a 70/30 percent mix of Douglas-fir/Ponderosa pine. The proposal would selectively remove much of the smaller fir in and around the pine. The proposed treatments would be restoration treatments designed to provide for structural diversity.

Road maintenance would be performed on approximately 6 miles of existing road. Approximately 1.4 miles of new construction and .4 miles of temporary road would be required. These roads would be revegetated and closed, via slash, earth berms or gates, to unauthorized vehicle traffic. The Temporary roads would be reshaped to slope.

HARVEY RIDGE

The site is similar to Silver King section, therefore the proposal is similar as well. The proposal would target three units totaling approximately 350 acres. Estimates are 1.7 MMBF of predominantly smaller Douglas-fir < 18 inches D.B.H. with some smaller Ponderosa pine also being harvested. No pine >21 inches D.B.H would be removed under this proposal. The treatment would emulate a moderate intensity mixed severity fire that is believed to have occurred historically. Residual basal areas would average 40-60 square feet. Volume removed would be approximately 50-60 percent. Designated areas along openings, and ridges would be harvested lighter to provide overstory cover, minimize windthrow and facilitate movement between un-entered areas. See attachment A-7 for details on these areas

Road maintenance would be required on approximately 3 miles of road and .5 miles of temporary road would be needed. The temp road would be re-vegetated and closed. Portions of the temp road may be re-contoured

ANTELOPE

The proposal would remove approximately 400 MBF from 90 acres. The treatment would be an uneven-age prescription designed to emulate a low intensity ground fire that would have lowered stocking levels and densities to what is believed to have occurred historically. The treatment would target much of the Douglas-fir and thin the existing smaller Ponderosa pine. No pine >21 inches D.B.H. would be removed. Approximately 50-60 percent of the volume would be removed with post harvest Basal areas being 40-50 square feet.

Approximately 2 miles of existing road would be maintained and 1.2 miles of new construction would be required with a temporary crossing of Antelope Creek. The new road would be closed, via slash, earth berm or gate, to prevent unauthorized vehicle use.

NIRLING HILL

The proposal would harvest approximately 100 MBF from 40 acres of even-aged second growth timber. The treatment would be a commercial thinning designed to capture mortality that would be expected to occur with natural processes through attrition. The treatment would reduce stocking levels, increase growth rates on existing trees and produce a healthier stand.

Approximately 2 miles of existing road would be maintained. No new road construction would be needed. Temporary drive across range roads would be utilized.

2.5 GENERAL MITIGATION MEASURES FOR THE ACTION ALTERNATIVE

The following are to be applied to the action alternative, if selected.

1. Mitigations common to all threatened, endangered or sensitive species: If any threatened, endangered or sensitive species were encountered during project planning or implementation. Project related activities would cease until a DNRC wildlife biologist and the project leader determined if additional habitat protection measures are needed.
2. If an active owl nest or other raptor were encountered, A DNRC biologist would be contacted and additional mitigation measures may be implemented.
3. Implement and incorporate all Best Management Practices and Streamside Management Zone guidelines concerning road construction, reconstruction, stream crossings and road drainage features.
4. Use designate skid trails to avoid damage to areas with springs, seeps, ephemeral draws and/or sensitive soils.
5. Emphasize the retention of large diameter Ponderosa pine for seed source, species diversity and potential future snag recruitments.
6. All road construction and harvesting equipment will be cleaned of plant parts and seeds to prevent the possible introduction of noxious weeds. Equipment will be subject to inspection by the forest officer prior to moving equipment onsite.
7. Weed treatment, if necessary, may include spot herbicide treatments for identified noxious weeds. Herbicide treatment would be implemented by a certified applicator according to herbicide label directions and in accordance with applicable laws and rules of the Granite County Weed Board and the State of Montana.
8. Snags would be retained as would green, cull trees for future snag recruitment within acceptable OSHA rules.
9. Designated areas within the sale area will be lightly treated or un-entered to provide overstory cover and movement corridors.
10. Newly constructed roads would be closed by gate, earth berm or slashing.

2.5.1 ALTERNATIVE COMPARISON

Table 1.

Summary of Consequences

Items and Actions	Alternatives	
	A	B
Volume Harvested	0	4 MMBF
Harvest Acres (~)	0	830
% of ownership being treated	0	60%
Divergence from Historic Conditions	Stands denser than average historic conditions	Within natural range of variablility for tree stocking
Tree Vigor	Declining	Improving
Cumulative ECA* : So. Fork Willow Creek Cottonwood Creek	 3101 713	 3201 739
WYI * (A is existing conditions) So. Fork Willow Creek Cottonwood Creek	 6.4 7.9	 6.6 7.9
Roads: (miles) Reconditioning/reconst. New Construction Temporary Road	 0 0 0	 13 2.6 .9
% elk security cover post harvest (A is existing condition)	54%	53% *1% reduction
old growth harvested	None	None
Effects to recreational hunting	None	Temporary displacement
Effects to soil productivity	None	Minimal
Water Quality	No change	Long-term Improvement to Cottonwood Creek, No change to Antelope Creek, Cow Creek
Employment	No Change	38.48 man years
Labor Income	No Change	$1,300,472
Estimated Revenue (*stumpage)	0	$800.000

* ECA = Equivalent Clearcut Acres
* WYI = Water Yield Increase
* Stumpage = The delivered log prices minus costs and an amount for profit and risk.

3.0 AFFECTED ENVIRONMENT

3.1 Introduction

Chapter 3: Affected Environment succinctly describes the resources of the areas that would affect or would be affected by the alternatives if they were implemented. In conjunction with the description of Alternative A: No-Action Alternative in Chapter 2 and with the predicted effects of the No-Action

Alternative in Chapter 4, this chapter establishes the scientific baselines against which the decision maker and the public can compare the effects of the action alternative.

3.2 General Description Area

The proposed Silver King and Harvey Ridge Timber Sales are located in the Eastern foothills of the John Long Mountains Southwest of Drummond, MT. Elevations in the Project area vary between 4200 and 6000 feet. Three Stream drainages are involved: Cottonwood Creek (a tributary to Lower Willow Creek), Cow Creek, and Antelope Creek.

Forested areas are comprised of Douglas-fir, Ponderosa pine and Lodgepole pine. Forest Habitat types present are primarily PSME/CARU (PIPO and CARU phases). The Antelope section has areas of PIPO/AGSP and PSME/CARU (Rich 1984; Pfister, et al. 1977).

Historical fire frequencies for these habitat types generally are 5-42 years (Fischer and Clayton 1983). Most of the stands in the proposed project area have higher stocking levels and greater canopy closure than occurred historically. Many of the 60-90 year age class would likely have been thinned out or a small patch completely killed by a normally occurring fire event. Naturally occurring fire events would have created opportunities for continued regeneration of the seral Ponderosa pine and would have generally kept the stand structure more open than it is today (Remington 1994; Joy and Hutton 1991).

Typical understory vegetation may have historically consisted of aspen, willow, various smaller shrubs (i.e. ninebark, huckleberry, juniper, etc.) and a variety of herbaceous species (pinegrass, arnica, aster) (Pfister, et al 1977; Fischer and Clayton 1983). Fire suppression has allowed the stands to develop a more closed canopy condition, which has caused a decline in certain understory species (native bunchgrasses). General timber stand vigor ranges from poor to good. In all sections, except Nirling Hill there is evidence of Mountain Pine beetle attacks causing mortality in the Ponderosa pine.

Native bunchgrass grasslands, which presently make up 64% of the project area, are experiencing encroachment by both Douglas-fir and Ponderosa pine. This is likely due to the lack of frequent fires, which historically kept the south and west aspects clear of all but a few scattered Douglas-fir and Ponderosa pine (Arno 1991; Arno and Gruell 1986; Gruell 1983). Grasslands are interspersed within forested areas (regardless of aspect) where deep, rich soil conditions and frequent fires combined to retard tree establishment.

Intensively managed private ranches and private industrial land control access to all the trust lands in the proposed project area. Access consists of permanent roads with some drainage features installed and lower standard "two tracks". With the exception of the Silver King road, these roads are generally closed to the public year round.

The existing timber stand conditions will be evaluated by section.

3.2.1 SILVER KING SECTION:

The section consists of 498 forested acres of multi-storied Douglas-fir/Ponderosa pine (85%/15%) mix. 183 acres would not be harvested under the action alternative. The understory composition is 90%

Douglas-fir and 10% Ponderosa pine. No old growth is present. A series of cruise plots were installed in the proposed units to better analyze current conditions. The results are shown in the following table:

TABLE III.1 (Unit 1 Is top number, **Unit 2** is bottom)
Silver King Section

VARIABLE	DF	PP	TOTAL
Basal Area / Acre	106 **95**	12	118 **95**
Basal Area / Acre > 18" DBH	21 **18**	6 **1**	27 **19**
Trees / Acre > 7" DBH	133 **123**	10 **1**	143 **124**
Trees / Acre > 21" DBH	2.5 **3.2**	1.5 **.2**	4 **3.4**
Average Tree DBH	11.5" **11.3"**	13.2" **19.0**	NA NA
Gross MBF / Acre	10127 **8711**	1520 **227**	11740 **8939**

Approximately 1.4 million board feet of saw timber was removed between 1939 and 1949. These treatments removed many of the largest Douglas- fir. The larger Ponderosa pine component is at risk of being lost due increased densities of Douglas-fir creating stress on the larger pine and the increase in ladder fuels that pose risk of a stand replacing fire. With the past harvest and absence of fire, Douglas-fir has greatly increased and is out-competing the existing Ponderosa pine. Few Ponderosa pine would be removed with no pine >21" D.B.H. being removed. Several pockets of pine beetle attacks are present in the pine. The proposed treatments would be a restoration treatment designed to emulate a low intensity, mixed severity fire believed to have occurred historically. Maintaining the health of the existing Ponderosa pine and regeneration of new Ponderosa pine would be a major focus of this proposal. Designated areas along openings, ridges and draws would be left heavier to provide overstory cover, visual screening, windthrow protection and promote diversity.

3.2.2 NIRLING HILL SECTION:

The section has 160 acres of forest cover. The proposed harvest treatment encompasses 40 acres. DNRC's stand Level Inventory indicates the proposed harvest units are in the 100-149 age class. The average diameters are between 10" and 14" DBH. The proposed treatment would be a commercial thinning, designed to capture mortality that would be expected to have occurred naturally through attrition, and increase vigor and growth.

3.2.3 HARVEY RIDGE SECTION:

The section has 543 acres of forest cover. No old growth is present. Under the action alternative, 207 acres would not be entered and would remain in it's present condition. Approximately 2.6 million board feet was removed between 1939 and 1958. Most of the large Douglas-fir were removed during the treatments. Thus, the remaining old trees are generally of poor form and lacking in sizeable canopy cover. Sample plots were taken and summarized in table III-2:

TABLE III-2
Harvey Ridge Section

Variable	DF	PP	Total
BASAL AREA/AC	90	17	107
BASAL AREA/AC > 18" DBH	15	17	32
TREES PER ACRE > 8" DBH	115	15	130
TREES PER ACRE > 21" DBH	2.9	3.5	6.4
AVERAGE TREE DBH	12	18	
GROSS VOL/AC	6817	2041	8858

The proposed treatment here would be much of the same as the Silver King section. The Ponderosa pine would be maintained and enhanced by removing much of the Douglas-fir understory. Specific mitigation measures would be: Leave un-entered patches in the NW corner, NE corner and SE corner, areas of light harvest along ridges to facilitate movement of wildlife species within un-entered areas, no Pine greater than 21" DBH would be removed. The Douglas-fir areas would be selectively managed to maintain the uneven-age structure and diversity that is currently present.

3.2.4 ANTELOPE GULCH SECTION:

The section consists of 234 acres of forest cover. The proposed treatment would harvest approximately 90 acres. Much of the section consists of Large yellow pine. When ages were taken with an increment bore, very few of them were greater than 150 years of age. After analyzing preliminary cruise data, it was determined that the stands did not meet Green et. al. age criteria for Ponderosa pine old growth. The entire proposed harvest unit is historically Ponderosa pine cover type, though Douglas-fir is greatly increasing its stronghold. The yellow pine are scattered throughout the section, mostly in clumps but individually as well. A series of cruise plots were taken and the results are shown in the table III-3:

Table III-3
Antelope Section

Variable	YP (> 150)	DF	BP (<150)	Total
BA/AC	14	53	22	89
BA/AC > 18" DBH	14	16	14	44
TPA	4	54	13	71
TPA > 18" DBH	3	6	6	15
AVG. DBH	25"	12"	16"	
MBF/AC	2778	4252	2209	9239

Most of the older Ponderosa pine in the section was found close to the draw bottom. The section also has a tremendous amount of regeneration. (up to 5000 per acre in places). The regeneration consists of 50

percent Ponderosa pine and 50 percent Douglas-fir. There is a mountain pine beetle problem in the stand as several pockets of beetle killed trees were found. An estimated 2 large trees (> 18" DBH) per acre have died recently (last 10 years) to beetles. The proposed treatment would be a Ponderosa pine restoration harvest where the much of the Douglas-fir would be targeted. Enhancement of existing large old Ponderosa pine and recruitment of large old Ponderosa pine would be a goal of the proposed treatment.

For better flow for the affected resources carried forth from chapter 1, Chapter 3: Affected Environment, and Chapter 4: Environmental consequences will be combined.

Chapter 4: Environmental Consequences is the scientific and analytic basis for the summary of comparison of effects presented in chapter 2 of this EA. This chapter presents in detail and by alternative the following effects:

- Direct, indirect, and cummulative effects of all alternatives, including the no-action alternative.
- Relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity.
- Irreversible commitment of resources that would be involved if any of the alternatives were implemented.
- Irretrievable commitment of resources that would be involved if any of the alternatives were implemented.
- Adverse effects that could not be avoided.

Analysis Area: An analysis area was developed to assess existing conditions and environmental consequences, as well as cumulative effects, of the proposed action for threatened and endangered, as well as sensitive species which are likely to be influenced by management. This area was generally described by a polygon inclusive of all lands within one mile of parcels where treatment is proposed. For some species, where it was biologically justified, a different analysis area was delineated. Any divergence from the general analysis area was described in the narrative for that species. If no description of the analysis area is included in the narrative for a species, then the general analysis area described above was used.

3.3 Affected environment and Environmental consequences.

3.3.1. Impacts to Threatened, Endangered and Sensitive Species

THREATENED AND ENDANGERED SPECIES

Affected Environment: Bald Eagle

Bald eagles occur outside of the analysis area, primarily associated with the Clark Fork River, which is approximately 2.5 miles from the closest (i.e. northern most) proposed harvest unit (Antelope Gulch). Bald eagles are currently listed as Threatened in Montana under the Endangered Species Act. Forested habitats frequented by bald eagles are typically near (<1 mile) large. bodies of water. Bald eagles show a strong preference for multi-layered, mature or old growth forest stands with large emergent trees and snags for nesting and perching sites (MGEWG 1991). Wintering habitat generally occurs near local food concentrations, generally along major river drainages and around large lakes (MBEWG 1991).

Known nest sites and nesting habitat. No known nesting bald eagles occur on the any of the proposed harvest parcels. One known nesting pair of bald eagles occurs in the general area, located in Section 18 of T11N R13W (Mulkey Oxbow). However this nest site is over 2 miles from the closest proposed harvest unit (i.e. Antelope Gulch), which is outside the analysis area. Lower Willow Creek Reservoir, which may provide foraging habitat for bald eagles, is located approximately 1.5 miles distant from the Nirling Hill and Silver King proposed harvest units. However, no known bald eagle nest sites occur in association with this reservoir. Nesting habitat potential is generally very low for bald eagles within the harvest units due to the relatively long distances to a major water body and, with the exception of Antelope Gulch, the limited amount of large nesting trees preferred by bald eagles. Some foraging activity likely occurs within the analysis area during the late winter and spring as bald eagles search for winter-killed carrion.

Effects of No-Action Alternative

If no harvest were to occur on the proposed harvest units over the next several decades, competition from encroaching Douglas-fir trees would continue to reduce the vigor of large ponderosa pine and Douglas-fir trees preferred by bald eagles for nesting. In addition, the risk of stand replacing wildfire would continue, possibly increasing as stands became more susceptible to insect infestation and fuel loads continued to accumulate. However, the effects of this succession would be minimal due to the very low likelihood that bald eagles would use the proposed harvest stands as they are too distant from preferred foraging and nesting habitat.

Cumulative Effects of the No Action Alternative

From the standpoint of cumulative effects, harvesting on adjacent private lands within the analysis area has removed structural features important for bald eagle nesting. Therefore, the structural conditions preferred by bald eagles for nesting in such areas are limited. Continued degradation of the proposed harvest units with structural features important to bald eagle nesting habitat (i.e. Antelope Gulch, and to a lesser extent, Silver King and Harvey Ridge) resulting from increased mortality of large, old ponderosa pine trees would further reduce bald eagle nesting structure. However, the relatively long distances to large bodies of open water likely preclude use by bald eagles and consequently there would be no direct, indirect, or cumulative effect from implementation of the No-Action Alternative.

Effects of the Action Alternative

If the proposed harvest activities are implemented, insect, disease, and fire risks would decrease, and mortality of large ponderosa pine and Douglas-fir trees would be reduced. In addition, the proposed harvest treatments would primarily remove smaller diameter, intermediate, and suppressed trees, composed mostly of Douglas-fir, while larger Douglas-fir and Ponderosa pine would be retained. Although screening cover around active nests is important (MBEWG 1991), the proposed treatments should result in minimal, to no effect on the relative availability of potential nest trees for bald eagles. However, the effects of the proposed harvests would be limited due to the very low likelihood that bald eagles would use the proposed harvest stands for nesting as they are too distant from large bodies of water needed for foraging.

Cumulative Effects of the Action Alternative

From the standpoint of cumulative effects, harvesting on adjacent private lands within the analysis area has removed structural features important for bald eagle nesting. Therefore, the structural conditions preferred by bald eagles for nesting is generally limited within the analysis area. The proposed Action Alternative would likely reduce the level of mortality of large ponderosa pine within the proposed harvest units. In addition, retention of large Douglas-fir and ponderosa pine within harvest units would maintain structural features important to bald eagle nesting habitat, at least in the parcels with these structures (i.e. Antelope Gulch, and to a lesser extent, Silver King and Harvey Ridge). However, the large distances to large bodies of open water likely preclude use of lands within the analysis area by bald eagles for nesting and consequently there would be no direct, indirect, or cumulative effect from implementation of the Action Alternative.

Affected Environment: Grizzly Bear

Grizzly bears are currently classified as Threatened in Montana under the Endangered Species Act. Grizzly bears are a wide-ranging species and therefore a larger analysis area was necessary to assess effects. The analysis area used in this assessment was the area encompassed by the lower half of Township 11N Range 14W up to the Clark Fork River, Township 10N Range 14W, Township 10N Range 15W, Township 9N Range 15W, and Township 9N Range 14W which generally encompasses the hydrologic drainage area of Lower Willow creek, Cow Creek, Harvey Creek, Antelope Creek, and the upper drainages of Upper Willow Creek.

Grizzly bears utilize a wide range of habitats, from low elevation riparian areas to high elevation berry fields, however habitat use is greatly influenced by the presence of human activity, which results in bear-human conflicts that generally result in increased grizzly bear mortality risk. Human access to preferred habitats, as represented by total and open road densities, are therefore an important factor in grizzly bear habitat use. The proposed harvest activities are approximately 30 miles distant, and separated by a major freeway complex (i.e. I-90), from the Northern Continental Divide Grizzly Bear Ecosystem. Therefore, the likelihood that grizzly bears would occur within the analysis area in the near term is very low. However, grizzly bears are wide ranging species and grizzly bears could utilize habitats within the analysis area. Grizzly bears utilize low elevation riparian areas in the spring, where they feed on grasses and forbs. In addition, grizzly bears forage in big game winter range areas in the spring in search of winter-killed carrion. The analysis area of the Antelope Gulch parcel includes intermediate riparian zones that would provide some spring foraging habitat and the Silver King and Harvey Ridge parcels provide some big game winter range. However, the large amount of private property within the analysis area and the high levels of human use, including livestock operations, greatly reduce the value of these marginal habitats for grizzly bears.

Effects of the No-Action Alternative

If no harvest occurred within the analysis area, no new roads would be constructed and no existing roads would be reconstructed. Therefore, access would not be increased in the parcels with grizzly bear habitats.

Cover would be retained with the harvest units, however continued reduction in stand vigor resulting from competition could increase the risk of disease, insect, and fire disturbances that could remove habitat through a stand replacing event. The relatively high road densities (> 3 mi/sq. mi.) on private lands, and the active livestock operations greatly reduce the value of these parcels for grizzly bears and likely result in a very low likelihood of use.

Cumulative Effects of the No Action Alternative

From a cumulative effect standpoint, the adjacent private lands are either commercial timberland in early successional forest habitats with high road densities, or open rangeland habitats with active livestock operations. This would not change under the No-Action Alternative and therefore there would be no cumulative effects. No known proposed timber harvest activities have been planned on Forest Service lands in the analysis area. Some level of harvest is likely to occur on private commercial forest lands within the analysis area, however these areas have been intensively managed over the past 10 years and so additional activities would be limited and would likely have little incremental affect on habitat conditions in these parcels.

Effects of the Action Alternative

Implementation of the Action Alternative would result in increased road density and decreased cover. However, all roads within the harvest areas will be closed after use by a gate, earth berm, or slashing. This should reduce the potential affects of increased access created by the construction and reconstruction of roads. In addition, some level of cover would be retained in all units, with effective cover (i.e. areas with low sight distances) being maintained in some portions of the harvest units, especially riparian and leave patches on the Antelope Gulch, Harvey Ridge, and Silver King parcels. These effects (i.e. increased total road density and reduced cover) would have minimal affect on grizzly bears since the parcels are not within a designated Recovery Zone, are not likely to be occupied by bears in the near term, do not contain large amounts of high quality habitat, and are surrounded by private lands with low cover and high road densities (commercial forestland parcels) or low cover and active livestock operations (private ranch parcels).

Cumulative Effects of the Action Alternative

From a cumulative effects standpoint, implementation of the project would further decrease the amount of cover in the analysis area and increase the total road densities. However, the low likelihood of grizzly bear use and the poor quality of the general area from a grizzly bear security standpoint result in only a minimal affect. As stated above, no known harvest activity is expected on Forest Service and a low to moderate level of activity is expected on private lands in the analysis area, but the level of potential activity and incremental effect on adjacent private sections would result in very limited cumulative effects to grizzly bears.

Affected Environment: Gray Wolf

Wolves are currently classified as endangered in Montana under the Endangered Species Act. Due to the large territories of wolf packs (averaging approximately 188 square miles) based on data from radio

collared wolves in northwestern Montana during 1999, (USFWS 1999), the analysis area described for grizzly bears will be used for this analysis also. Sporadic reports of wolf tracks have been reported in the Willow Creek drainage, however there are no documented denning sites or known consistent use. Activity that would be expected if a pack occupied this area has not been documented (Joe Fontaine, USFWS, pers. comm., 6 February 2002). The closest established active wolf pack is the Castle Rock pack located north of Garrison, Montana which is over 30 miles from the analysis area. Preliminary indications are that a pack has also potentially established in the east fork of the Bitterroot River, which is over 24 miles from the analysis area, however this pack has yet to be verified by U. S. Fish and Wildlife personnel (Joe Fontaine, pers. comm., 6 February 2002).

Wolves are wide ranging and forage primarily on big game. The analysis area contains big game winter range, however, most elk winter just outside the analysis area in the Rock Creek drainage to the west, with concentrated use in the area immediately adjacent to the Silver King and Harvey Ridge project areas being generally limited to fall (prior to hunting season) and spring (Canfield 1991. John Firebaugh, pers. comm.., 12 February 2002, Mike Thompson, pers. comm.., 12 February 2002). Therefore, the analysis area is not likely to support large concentrations of elk (approximately 75-100, field personnel observations, 1999,2000, and 2001) during the winter. Primary use would be expected in the eastern portion of the analysis area, near the project areas. The eastern portions are generally dominated by high levels of human use especially activities related to livestock operations on private ranches in the surrounding valley bottoms.

Effects of the No-Action Alternative

Under the No-Action Alternative, cover would be retained within the harvest units and roads would not be constructed or reconstructed. This would likely benefit big game populations in the analysis area, which would consequently benefit wolves, by maintaining current levels of human access and cover on winter range habitats. In addition, the risks of stand replacing fire as describe above could result in more severe reductions in cover to the stands in the proposed harvest units. The maintenance of current road densities could also contribute to wolf security, however the high levels of human access related to livestock operations would likely reduce the value of this area for wolves as the increased mortality risk would outweigh any benefit resulting from the retention of current big game habitat conditions.

Cumulative Effects of the No Action Alternative

From a cumulative effects standpoint, intensive harvesting and road building on private lands adjacent to the proposed harvest units has reduced the value of the area immediately adjacent to the project areas for big game and consequently wolves. Reduced cover and high road densities can increase big game hunter harvest vulnerability as well as increasing vulnerability of wolves to direct mortality. No known harvests have been proposed on Forest Service lands in the analysis area. Continued activity on private commercial forestland would probably occur at low intensities due to limited mature timber availability. These conditions likely have ongoing cumulative effects to wolves indirectly, through reductions in big game

populations, and directly through potential for increased mortality. However the high human activity, including livestock operations, and moderate levels of big game on winter ranges in the analysis area result in relatively low quality habitat that would not likely support a breeding pack of wolves. Consequently, there would be only minimal effects to wolves.

Effect of the Action Alternative

Implementation of the Action Alternative would result in increased total road densities and reduced cover on the proposed harvest units. These changes could affect the big game populations in the analysis area, resulting in some effect on wolf foraging opportunities. However, the fact that access would be restricted on all new roads reduces potential for increased hunter access and consequently big game vulnerability. In addition, post harvest retention levels in Nirling Hill, as well as retention of cover in riparian areas and in retention patches in Antelope Gulch, Harvey Ridge, and Silver King will provide some level of cover in post harvest units, thus reducing the overall affect of the cover reductions on wolf prey densities. In addition, as stated above, big game densities are generally not high in this area, providing only moderate concentrations of wolf prey during the winter (75-100 in winter, field personnel observation, winter 1999, 2000, and 2001). Finally, the fact that wolf pack related activities have not been documented in this area (i.e. only transient use by individual or small numbers of wolves) indicates a low likelihood that wolves will be directly or indirectly affected by the proposed activities.

Cumulative Effects of the Action Alternative

From a cumulative effects standpoint, intensive management on private commercial forestlands adjacent to the Harvey Ridge and Silver King harvest units has reduced cover and increased road densities within the analysis area. However, most of these roads are restricted to public access and continued harvest activity is likely to be minimal as available mature forest stands appear limited on these lands. All proposed harvest units are associated with commercial livestock operations, which generally are not conducive to active wolf activity since the presence of livestock can lead to control actions and direct mortality. No known harvest has been proposed on Forest Service lands in the analysis area, while activity on private commercial forestlands, probably at low activity levels, would likely occur. However the cumulative effects of this activity are minimal. Although the proposed harvest activities could affect wolf prey densities in the short term, this effect is likely minimal due to the lack of documented wolf pack activity in this area and the high levels of human disturbance and activity within the analysis area, which reduces the likelihood that wolves could successfully utilize these habitats.

To insure that direct effects are minimized, wolf status, primarily focused on wolf denning activity, within the analysis area will be reconfirmed prior to initiating harvest activity with the appropriate personnel in the U.S. Fish and Wildlife Service. Should a wolf den be identified within one mile of any proposed activities, operations would cease and a DNRC biologist would be contacted immediately. Necessary mitigations would then be developed and implemented prior to re-initiation of activities.

Affected Environment: Lynx

Canada lynx were listed as threatened in Montana under the Endangered Species Act in 2000. Lynx are a forest dwelling, medium sized carnivore that inhabits boreal forests in the southern extent of its range in Montana (Aubry et al. 1999). Due to the large home ranges of lynx (average female home range of 43 to 115 km^2 in Montana studies (Aubry et al.1999)), the analysis area used in the grizzly bear and wolf assessments will be used in the lynx assessment.

Based on recent research reported from an intensive lynx study located approximately 20 miles to the north of the analysis area, lynx generally occur between 1,200 m and 2,100 m in elevation in forests dominated by mesic mixed forest composed primarily of Douglas-fir, western larch, and lodgepole pine at lower elevations and subalpine fir, whitebark pine, and Engelmann spruce at upper elevations (Aubry et al. 1999). The primary prey species of lynx are snowshoe hares and hence habitat use occurs predominantly in early to mid-successional stands that produce high densities of hares, and lynx appear to avoid openings with little cover or foraging opportunity (Aubry et al. 1999). Lynx denning habitat is less well documented, however denning stands are generally characterized as mature to old, subalpine fir and Engelmann spruce dominated stands on moist sites (north facing slopes) with moderate to high canopy closure (i.e. at least 50% canopy closure) and accumulations of coarse woody debris (i.e. at least 40 logs/50 m) that provide security and escape cover for kittens (Koehler 1990, Koehler and Brittell 1990).

Although within the elevation range of the species, the forest types found in the project areas are dominated by warm, dry vegetation and stands composed primarily of dry Douglas-fir, ponderosa pine, and some lodgepole pine. These forest types are not optimal for lynx, and although some lynx occurrence has been noted in the literature within Douglas-fir and lodgepole pine forests, these areas have generally been associated with areas of boreal forest dominated by subalpine fir and Engelmann spruce (Aubry et al. 1999). More extensive lodgepole dominated forests are found to the west (approximately 2-3 miles) on Forest Service lands, however, the eastern portion of the analysis near the project areas is dominated by dry ponderosa pine forest types and open grassland/xeric shrubland types not preferred by lynx. Therefore, it is not likely that lynx would effectively use the project areas for breeding and foraging, although some transient occurrence is possible.

Effects of the No-Action Alternative

Due to the fact that the forest conditions in the analysis area are only marginal habitat, and there is a low likelihood that lynx would occur within the project areas, there would be no direct, indirect, or cumulative effects to lynx if the No-Action Alternative were implemented.

Effects of the Action Alternative

Due to the fact that the forest conditions in the analysis area are only marginal habitat, and there is a low likelihood that lynx will occur within the project areas, there would be no direct, indirect, or cumulative effects to lynx if the Action Alternative were implemented.

SENSITIVE SPECIES

Affected Environment: Flammulated Owl

Flammulated owls occur mostly in mid-elevation conifer forests that have a significant old ponderosa pine component. They are known to occur on the Deerlodge National Forest in low-elevation Douglas-fir/Ponderosa pine forests (Verner 1996). Flammulated owls appear to select open forest stands with large trees and snags for nesting and foraging (many authors cited in McCallum 1994). In addition, use areas have been found to have occasional clusters of thick vegetation for roosting (Howie and Ritchey 1987), and adjacent grassland or xeric shrubland openings that create edge foraging habitat (Wright 1996). Flammulated owls are secondary cavity nesters, usually utilizing cavities excavated by pileated woodpeckers in larger (over 36 cm dbh) conifer trees (cited in McCallum 1994). Flammulated owls are insectivorous and utilize foraging techniques adapted to open forest conditions or forest/grassland edge habitats (cited in McCallum 1994).

Flammulated owls are known to occur within the project and analysis areas. Although extensive surveys have not been conducted, they have been detected in Harvey Creek (Sec. 24, T10N, R15W) (MNHP 1999). All proposed harvest units occur within mid-low elevation Douglas-fir/Ponderosa pine forest types. The Antelope Gulch section is dominated by large ponderosa pine and was historically a ponderosa pine cover type and, although composed of dense Douglas-fir in some portions of the proposed harvest unit, suitable flammulated owl habitat does occur over most of the unit. The Nirling Hill section is composed of 40 acres of proposed harvest in three patches and is dominated by relatively dense, even-aged, intermediate sized (10-14' dbh), second growth Douglas-fir forest, which would not likely be suitable flammulated owl habitat. The Silver King and Harvey Ridge proposed harvest units are both composed of multiple storied Douglas-fir dominated forest types with some (approximately 20%) ponderosa pine component. Although not optimal due to higher densities of Douglas-fir, portions of both proposed harvest units would be suitable nesting/foraging habitat.

Effects of the No-Action Alternative

Without the proposed understory thinning harvests, ponderosa pine would continue to experience competition with encroaching Douglas-fir, leading to continued, and potentially accelerated mortality of the largest size class of ponderosa pine. This would create additional nesting habitat for flammulated owls in the short term(i.e., several decades), but lead to long term deficits in nesting habitat due to the failure of smaller size classes to grow into larger size classes, especially for ponderosa pine. In addition, foraging habitat would continue to decline as tree density increases or remains high.

No road construction and reconstruction would occur under the No-Action Alternative. Therefore, vulnerability of snags to illegal firewood cutting would not be increased. However this affect may be minimal due to the efforts included in the Action Alternative to discourage use of roads after harvest (i.e. slashing, berming, recontouring) and the limited access provided by private closed roads surrounding the sections proposed for harvest.

If no harvest occurs as proposed under the Action Alternative, there would be a continued, and potentially increasing risk of stand replacing wildfire which, depending on the severity of the fire, would likely remove habitat for flammulated owls for an extended period of time (>100 years).

Cumulative Effects of No-Action Alternative

Flammulated owl habitat is generally restricted within the analysis area to parcels on State land that have not been harvested. Recent harvests (in the past 10 years) on private lands surrounding the parcels proposed for harvest have generally been even aged treatments that resulted in early successional forest types that do not provide suitable flammulated owl nesting habitat. This has generally isolated these stands from extensive patches of suitable flammulated owl habitat (with the exception of Harvey Ridge which is near to an extensive patch of older forest on U.S. Forest Service lands), thereby reducing the value of these stands at the flammulated owl population level.

Effects of the Action Alternative

The proposed harvest activities are designed to reduce competition from encroaching Douglas-fir on historically ponderosa pine dominated sites. Removal of primarily suppressed, and sub-dominant trees, would open forest stands, creating better foraging conditions for flammulated owls. Removal of dense, small tree patches in the harvest units could affect roosting habitat, however, the retention patches along riparian areas and cover retention patches would leave areas with no harvest that would provide potential roosting habitat. Large ponderosa pine potential nest cavity trees (>21" dbh) are not planned for removal in any of the proposed harvest parcels, and all snags that are not a safety hazard will be retained. Removal of smaller, suppressed, trees should also result in increased vigor in the retained trees, thereby increasing recruitment potential into the large tree class over time. Therefore there should be no affect to the availability of nesting habitat.

The proposed harvest activity will reduce the risks of disease, insect, and wildfire disturbances, returning these stands to more historical conditions. Thinning the smaller trees while retaining the large trees would decrease competitive stress on the remaining large trees, especially ponderosa pine, while encouraging medium-sized trees to grow larger and serve as long term replacements to the largest tree cohort. Although this may reduce tree density and roosting habitat conditions in the short term, by slowing the mortality of large ponderosa pine trees and removing some larger trees in areas of high density, proposed treatments would provide more stable, higher quality (i.e. better foraging habitat with retention of nesting and roosting habitats) conditions within the harvest units over the long term.

The road building activities associated with the Action Alternative could increase access into these areas, possibly increasing the risk of illegal firewood cutting to large snags. This would have a negative affect on flammulated owls, however the efforts to restrict access on these roads minimizes the risk of any large scale removal of potential nesting trees.

Cumulative Effects of the Action Alternative

Suitable flammulated owl habitat is limited in the analysis area due to intensive harvesting on private lands that has created early successional types not suitable for flammulated nesting activity, the prevalence of grassland/xeric shrub habitats, and the effects of fire suppression on structural characteristics of historically open ponderosa pine stands. Therefore, treatment of the proposed harvest units, which would improve flammulated owl habitat by improving foraging habitat, retaining nesting structure, and retention

of patches of denser structure in riparian and connectivity/cover patches that can serve as roosting habitat, would benefit the species. In addition, reducing the risks of stand replacing disturbances would result in longer term stability of the suitable flammulated owl habitat. Consequently, there would be minor positive cumulative effects to flammulated owls by implementing the proposed Action Alternative.

Affected Environment: Pileated Woodpecker

Pileated woodpeckers occur with the project and analysis areas. Pileated woodpeckers prefer mature and old growth conifer forest with a canopy dominated by large western larch or ponderosa pine. Mature aspen and cottonwood stands are also used by pileated woodpeckers. Pileated woodpeckers typically do not nest in trees less than 15" dbh, and preferred trees are generally over 20" dbh. Sufficient large snags and coarse woody debris are important components of pileated woodpecker habitat.

All the parcels have suitable pileated woodpecker habitat. The Antelope Gulch parcel has high quality pileated woodpecker habitat and they have been detected there. The Harvey Ridge and Silver King parcels also have suitable habitat and they have been detected on Harvey Ridge. The Nirling Hill parcel is suitable habitat, however the small size of the forested patches, and the second growth, medium-sized Douglas-fir dominated characteristics of the stands results in relatively poor habitat for pileated woodpeckers.

Effects of the No-Action Alternative

Without the proposed understory thinning harvests, ponderosa pine would continue to experience competition with encroaching Douglas-fir, leading to continued, and potentially accelerated mortality of the largest size class of ponderosa pine. This would create additional nesting habitat for pileated woodpeckers in the short term(several decades) by the creation of large snags, but lead to long term deficits in nesting habitat due to the failure of smaller size classes to grow into larger size classes, especially for ponderosa pine. In addition, foraging habitat would be created over the short term as ponderosa pine trees continue to succumb, however as this cohort is removed and replaced with smaller size Douglas-fir, foraging habitat would decline.

No road construction and reconstruction would occur under the No-Action Alternative. Therefore, vulnerability of snags to illegal firewood cutting would not be increased. However, this affect may be minimal due to the efforts included in the Action Alternative to discourage use of roads after harvest (i.e. slashing, construction of earthen berms, recontouring) and the limited access provided by private closed roads surrounding the sections proposed for harvest.

Under the No Action Alternative, there would be a continued, and potentially increasing risk of stand replacing wildfire. Hutto (1995) found that pileated woodpeckers did occur in burned forests, but he suggested that they require a mix of forest types and they are generally always detected near intact forest. Therefore, stand replacing fire could result in an increase in foraging substrate, but lower long-term nesting suitability, which would be dependent upon the actual extent and intensity of the particular fire event, should one occur. In summary, short-term (several decades) nesting and foraging habitat conditions would be enhanced for pileated woodpeckers under the No Action Alternative, however, long-term (>50 years)

sustainability of nesting habitat would be compromised due to expected high risk of attrition of preferred large ponderosa pine trees.

Cumulative Effects of the No-Action Alternative

Pileated woodpecker habitat within the analysis area is relatively limited outside of the proposed harvest parcels due to intensive harvesting on private lands and the adjacency of grassland/xeric shrub cover types. The Harvey Ridge parcel is the most connected with large blocks of mature/old forest types on Forest Service lands to the west. Without harvesting, risks of long term reductions in the large ponderosa pine component of proposed harvest stands would continue, as would risks of stand replacing wildfire. Although habitat may increase over the short term, there would be a long term negative cumulative effect to pileated woodpeckers as the remaining suitable habitat were reduced in value or eliminated over time.

Effects of the Action Alternative

Removal of large trees within harvest units would effect potential habitat for pileated woodpeckers. However, planned retention of all large (over 21" dbh) ponderosa pine trees will likely result in the retention of the preferred potential nesting trees within the harvest stands. In addition, retention of all snags, except when a safety hazard, will maintain current levels of foraging, roosting, and nesting habitat. Retention of areas with no or very little removal such as riparian areas and connectivity/cover patches will provide areas of denser trees, providing recruitment trees into the intermediate and large size classes and protect snags and coarse woody debris that would function as foraging habitat.

The proposed harvest activity will reduce the risks of disease, insect, and wildfire disturbances, returning these stands to more historical conditions. Thinning the smaller trees while retaining the large trees will decrease competitive stress on the remaining large trees, especially ponderosa pine, while encouraging medium-sized trees to grow larger and serve as long term replacements to the largest tree cohort. Although this may reduce habitat conditions in the short term by thinning dense forest structure preferred by pileated woodpeckers, over the long term it will provide more stable conditions within the harvest units by slowing the mortality of large ponderosa pine trees, and maintaining them in a condition of lowered risk.

The road building activities associated with the Action Alternative could increase access into these areas, possibly increasing the risk of illegal firewood cutting of large snags. This would have a negative affect on pileated woodpeckers, however the efforts to restrict access on these roads minimizes the risk of any large scale removal of potential nesting trees.

Cumulative Effects of the Action Alternative

Suitable pileated woodpecker habitat is limited in the analysis area due to intensive harvesting on private lands that has created early successional types not suitable for pileated woodpecker nesting activity, and the prevalence of grassland/xeric shrub habitats in the analysis areas. Treatment of the proposed harvest units will reduce pileated habitat values by removing some intermediate and large trees however the effect of these treatments is minimized by the retention of large, preferred nesting trees, retention of snags, live cull, and coarse woody debris that would serve as nesting, roosting, and/or foraging habitat. In

addition, reducing the risks of stand replacing disturbances will result in longer term stability of the suitable pileated woodpecker habitat. Consequently, there will be minor and short-term negative and long-term positive cumulative effects to pileated woodpecker habitat by implementing the proposed Action Alternative.

Affected Environment: Boreal Owl

Boreal owls prefer mature spruce/fir forests dominated by Englemann spruce. In these forest types, subalpine fir, Douglas-fir, western larch and lodgepole pine can also be well-represented species (Hayward et al. 1987). Boreal owls tend to be confined to cool sites at elevations greater than 5,200 feet in elevation (Hayward et al. 1987). Elevations on this project area (all parcels) range from about 4,200-6,000 feet, which is right at the lower elevation of boreal owl habitat. In addition, mature and over mature spruce/fir habitats are generally limited on the proposed harvest parcels and within the analysis areas, where forest conditions are warmer and drier than those typically preferred by boreal owls. Therefore, the treatment sites on all parcels involved in this project do not provide conditions normally considered suitable for boreal owls.

Effects of the No Action Alternative

Preferred boreal owl habitat does not occur on these parcels or in these analysis areas and therefore there would be no direct, indirect, or cumulative effect from adoption of the No-Action Alternative.

Effects of the Action Alternative

Preferred boreal owl habitat does not occur on these parcels or in these analysis areas and therefore there would be no direct, indirect, or cumulative effect from adoption of the Action Alternative.

Affected Environment: Fisher

Fishers prefer densely forested riparian old growth forests that have an abundance of coarse woody debris and large snags (≥30" dbh). They also tend to use moist forest types that exist below 6,000 feet in elevation. Although all of the proposed harvest units are below 6,000 feet in elevation, the stands are generally composed of warm, dry vegetation dominated by ponderosa pine and dry Douglas-fir cover types, which are generally not thought to be high quality fisher habitat. The Nirling Hill parcel does not have any riparian habitat, is composed of mid-successional, dry Douglas-fir forest, and is composed of three small, relatively isolated blocks of forest resulting in no preferred fisher habitat. The Antelope Gulch parcel has structural characteristics preferred by fishers and is centered around a riparian area but is also a dry ponderosa pine site that is not though to be preferred forest conditions for fishers. The Harvey Ridge and Silver King parcel have some of the structural characteristics preferred by fishers along riparian areas, however , the Silver King parcel, and to a lesser extent, the Harvey Ridge parcel, which is somewhat connected with more extensive old forest conditions on Forest Service lands to the west, are relatively isolated by intensive harvesting on adjacent private lands and the prevalence of grassland/xeric shrublands

in the analysis areas which reduces both the value of these parcels to fishers as well as the potential for fisher use.

Effects of the No-Action Alternative

Without harvest, potential habitat will be maintained in its current conditions, which generally has structural attributes preferred by fishers. However, there would be a continued, and potentially increasing risk of stand replacing wildfire. Stand replacing fire would likely result in the removal of fisher habitat by creating early successional habitats with open canopy closure not preferred by fishers. Selection of the No Action Alternative would be most beneficial to fishers, should they occur in the project or analysis areas. However, habitat potential is low due to the dry forest conditions that are naturally fragmented by open grassland and xeric shrublands.

Cumulative Effects of the No-Action Alternative

Fisher habitat within the analysis area is relatively limited outside of the proposed harvest parcels due to intensive harvesting on private lands and the adjacency of grassland/xeric shrub cover types. The Harvey Ridge parcel is the most connected with large blocks of mature/old forest types on Forest Service lands to the west. Without harvesting, the existing structure would be retained, however the continued, and potentially increasing build up of fire fuels due to the effects of insect infestations, disease, and competition mortality, would increase the risks of stand replacing wildfire which would eliminate fisher habitat. Due to the limited habitat potential found in the project and analysis area, no measurable cumulative impacts to fishers would be anticipated.

Effects of the Action Alternative

Removal of canopy closure and structural complexity within harvest units would potentially effect the quality of fisher habitat. However, the low quality of the area and the resultant low likelihood of use by fisher greatly reduces any potential effects. In addition, the planned retention of lightly thinned or unharvested patches along riparian areas and in locations to foster connectivity and retain cover will minimize these potential effects. Retention of snags and coarse woody debris, large green cull trees, and all large (over 21" dbh) ponderosa pine trees will also benefit fishers by maintaining some level of structural complexity within the harvest units which provides habitat for fisher prey species as well as denning and resting habitats.

The proposed harvest activity will reduce the risks of disease, insect, and wildfire disturbances, returning these stands to more historical conditions. Thinning the smaller trees while retaining the large trees will decrease competitive stress on the remaining large trees, especially ponderosa pine, while encouraging medium-sized trees to grow larger and serve as long term replacements to the largest tree cohort. Although this may reduce habitat conditions in the short term by reducing canopy closure and vertical structural diversity, over the long term it will provide more stable conditions within the harvest units and maintain the potential (albeit inherently low) for future use of the harvest areas by fishers. Measurable effects to fisher or their habitat would not be expected to occur as a result of the proposed treatments.

Cumulative Effects of the Action Alternative

Suitable fisher habitat is limited in the analysis area due to intensive harvesting on private lands that has created early successional types not preferred for fisher and the prevalence of grassland/xeric shrub habitats in the analysis areas. Effects within the proposed harvest units are generally reduced by the isolated nature of these parcels. The Antelope Gulch parcel is the only harvest unit that is directly connected to quality fisher habitat (i.e. the Clark Fork River corridor), however this unit is characterized by dry forest conditions that are not preferred by fisher and so use is unlikely. Intensive harvesting on private lands adjacent to the Silver King and Harvey Ridge parcels has reduced connectivity, thereby reducing the value of these areas to fisher as well. Finally, reducing the risks of stand replacing disturbances will result in longer term stability of the harvest units, thereby maintaining some low level of habitat for fishers over time. Consequently, there are not likely to be any cumulative effects to fishers from implementation of the Action Alternative.

Affected Environment: Black-backed Woodpecker

Black-backed woodpeckers are closely associated with standing dead forests, created by large fires of high intensity (Hutto 1995). Burned forests tend to be used soon after burns occur (~2-5 years), and large, densely stocked stands with an abundance of large trees of various species appear to provide the greatest benefit to black-backed woodpeckers (Heijl 2000, Hitchcox 1996). Black-backed woodpeckers are also found in green forests with high levels of insect activity (Goggans et al. 1989).

Black-backed woodpeckers are not migratory, but are known to undertake large movements in response to fire events. Therefore, the analysis area used for the grizzly bear assessment will be used for the black-backed woodpecker cumulative effects analysis.

No recent stand-replacement fires or major insect infestations occur within the analysis areas. However, the Ryan Gulch fire, which occurred in 2000 and covered approximately 16,000 acres is located just outside the analysis area north of I-90. This large fire event likely increased black-backed woodpecker populations. Within the project areas only the Silver King parcel, which has small (0.25 acres) patches of pine beetle activity would provide some, albeit almost immeasurable, level of preferred black-backed woodpecker habitat. Consequently, black-backed preferred woodpecker habitat is rare to non-existent in the analysis areas and the likelihood of resident populations of black-backed woodpeckers is very low.

Effect of the No-Action Alternative

Without harvesting, the existing stands and forest structure would be retained in their present condition, which is not preferred by black-backed woodpeckers so there would be no effect on black-backed woodpecker habitat.

Cumulative Effects of the No-Action Alternative

Preferred black-backed woodpecker habitat on adjacent lands is very limited due to the lack of mature burned stands in the analysis area, intensive harvesting on private lands, and the prevalence of open grassland/xeric shrubland habitats within and around the project area. Retaining the stands proposed for

treatment in an unharvested condition would cumulatively contribute to the amount of existing dense, mature forest within the analysis area, which could be converted to habitat following an intense fire event should one occur in the future. However, due to the speculative nature of actually predicting when and where an intense burn may occur and the abundance of dense mature forest "available" to such disturbance on the broader landscape, there would be little expected cumulative effect from implementing the No-Action Alternative on black-backed woodpeckers.

Effects of the Action Alternative

The proposed harvest units in the Action Alternative are not currently providing preferred black-backed woodpecker habitat, so treatment of these units would not effect black-backed woodpecker populations.

Cumulative Effects of the Action Alternative

Preferred black-backed woodpecker habitat on adjacent lands is very limited due to the lack of mature burned stands in the area, intensive harvesting on private lands and the prevalence of open grassland/xeric shrubland habitats within analysis areas. Harvesting within the proposed units would cumulatively reduce the amount of existing dense, mature forest within the analysis area, resulting in less high quality black-backed woodpecker habitat following an intense fire event. However, due to the speculative nature of actually predicting when and where an intense burn may occur and the abundance of dense mature forest "available" to such disturbance on the broader landscape, there would be little expected cumulative effect from implementing the Action Alternative on black-backed woodpeckers.

Affected Environment: Peregrine Falcon

Peregrine falcons were de-listed from Threatened Species status under the Endangered Species Act in 1999, but it is considered a DNRC sensitive species. In Montana, peregrine falcons typically nest in areas with large rock and cliff features. Foraging habitats are usually open areas such as marshes, estuaries and croplands. Such croplands (hay fields and grazing lands), open habitats, and marsh-like habitats (i.e. around the Lower Willow Creek reservoir) are present within the analysis areas. Although minor rock outcroppings occur adjacent to the Nirling Hill parcel, preferred nesting cliffs do not occur within the analysis areas. Suitable cliff features likely do occur along the Clark Fork River, which is approximately 2.5 miles from the closest proposed harvest unit (i.e. Antelope Gulch). No nesting pairs of peregrine falcons are known to exist within the analysis areas. Due to the lack of adequate nesting habitat, it is not likely that nesting peregrine falcons will occur within the project or analysis areas.

Effects of the No-Action Alternative

Due to the lack of potential use of the forested types within the harvest areas by peregrine falcons for nesting and foraging, and the fact that peregrines are not known to nest in the analysis areas, there would be no direct, indirect, or cumulative effects from adoption of the No-Action Alternative.

Effects of the Action Alternative

Due to the lack of potential use of the forested types within the harvest areas by peregrine falcons for nesting and foraging, and the fact that peregrines are not known to nest in the analysis areas, there would be no direct, indirect, or cumulative effects from adoption of the Action Alternative.

Affected Environment: Ferruginous Hawk

Ferruginous hawks are generally associated with open grasslands and xeric shrublands in rolling to rugged terrain and are known to occur in southwestern Montana. They forage mostly on small mammals in grasslands, hayfields, pasture lands, and open shrublands and nest in a variety of locations from the ground and low shrubs to trees and artificial platforms (MBCP 2000). Tree nesting pairs tend to nest in isolated or peripheral trees (MBCP 2000). Ferruginous hawks appear to be sensitive to human disturbance, especially early (i.e. March 15 to July 15) in the nesting period (multiple authors as cited in MBCP 2000). Contiguous forest, or interior forest are not used by ferruginous hawks (MBCP 2000). Preferred habitat for ferrugious hawks occurs within the analysis areas, however no known nests occur within the analysis areas.

Effects of the No-Action Alternative

Although ferruginous hawks may occur in the analysis areas, most activity would be associated with foraging, and possibly nesting, in grassland and xeric shrublands within the analysis area. Tree nesting on edge or isolated trees could occur, however no nests have been detected in the analysis areas. Ferruginous hawks would not utilize the forested interior of the proposed harvest units. Without harvesting, there would be no increase in human activity associated with logging and no removal of trees from the proposed harvest units. Therefore, there would be no direct, indirect, or cumulative effects to ferruginous hawks as a result of adoption of the No-Action Alternative.

Effects of the Action Alternative

Removal of edge trees from the proposed harvest units could affect ferruginous hawks. However, no nesting ferruginous hawks are known to occur in the area and ferruginous hawks are not limited to tree nesting. In addition, suitable nesting trees would be retained in the harvest units. Since edge trees would be retained, only minimal effects to ferruginous hawks would occur by removal of trees in the proposed Action Alternative. Foraging habitat would not be affected by the Action Alternative.

Ferruginous hawks appear to be sensitive to human disturbance, especially early in the nesting period. If harvest activities were planned to occur between March 15 and July 15, disturbance of nesting ferruginous hawks could occur. However, the likelihood of this is very low since no known nesting ferruginous hawks occur within the analysis area. Should harvest activities be planned during the early nesting period, detections of ferruginous hawks would be investigated to insure that nest activity is not occurring and that any active nest would not be disturbed by harvest activities. If a nesting ferruginous hawk is detected near areas of project-related activities (primarily haul routes through grassland habitats), operations would cease and a DNRC biologist would be contacted immediately to develop site-specific mitigations. Activities could resume, once mitigations were in place to minimize disturbance.

Other Sensitive Species

The following is an additional list of sensitive species that are known to occur, or could occasionally occur on State Trust Lands administered by the Southwestern Land Office. Due to limitations of available habitat, these species were determined to have a low likelihood of being adversely effected by this proposal or are not likely to occur in the vicinity of the activities proposed by the Action Alternative. Species occurrence records provided by the Montana Natural Heritage Program Database were also acquired and reviewed to document the presence or absence of these sensitive species in the project area vicinity. No impacts on any of these species are expected to occur as a result of this project.

Coeur d' Alene Salamander- No availability of fractured rock, waterfalls or splash zones present within the analysis areas. No known occurrences within the analysis areas. Proposed activities would not affect Coeur d' Alene salamander habitat.

Common Loon- No lakes/ponds with adequate size or habitat values will be affected by the Action Alternative and no known occurrence of nesting common loons within the analysis areas. Consequently, there would be no impacts to common loon by the proposed activities.

Harlequin Duck- Small sections of riparian habitat occur within the project and analysis areas, however streams are very shallow with small substrate material and it is unlikely that harlequin ducks would occur within treatment areas described in the Action Alternative. Hence there would be no effect from the Action Alternative.

Mountain Plover- Although grassland and xeric shrub habitats do occur within the analysis areas, the shortgrass prairie habitats preferred by mountain plover do not occur within the analysis areas. In addition, the proposed activities will have no effect on grassland habitats. No known local populations occur. Hence there will be no effect from the Action Alternative.

Townsend's Big-Eared Bat- No known hibernacula occur in the area. No mines are known to occur on the project areas, and no impacts to Townsend's big-eared bats would be expected to occur.

Northern Bog Lemming- Bogs and fens are absent from the analysis area and substantial moss development does not commonly occur within the project area therefore there will be no effects to northern bog lemmings.

Columbian Sharp-tailed Grouse- No known populations of Columbian sharp-tailed grouse occur in the area and grassland habitats are not affected by the proposed Action Alternative hence there will be no effect to the species.

3.3.2. Concern that the proposed action may cause stream sedimentation, which could adversely affect water quality.

Affected Environment

The proposed sale area is located within watershed areas for Antelope Creek, Cottonwood Creek (tributary to South Fork of Lower Willow Creek) and Cow Creek. Roads accessing the sale area are located in these same watersheds.

All drainages are impacted by heavy livestock use. Several segments of stream channel within the sale area exhibit moderate to severe trampling which has left streambanks in a relatively unstable condition..

All of the watersheds have been impacted by accelerated rates of sedimentation. The existing road system and current gazing management practices have both contributed to these impacts.

The existing road system contains several stream crossing sites. Many of these stream crossings are poorly designed and are not adequately maintained. Direct sediment delivery to stream channels is occurring at many of these crossing locations. Some of the existing stream crossings are functioning well, but lack the appropriate level of mitigation, which could further reduce potential sediment delivery (Gary Frank, Hydrology Report, Project file).

Effects of the No Action Alternative

The current road system, which is contributing sediment to streams in the project area, would not receive any improvements and sedimentation would continue to occur. The continued deterioration of the road system could increase sedimentation to the streams in the project area. Existing road use would continue and would contribute to the deterioration of the road system. The majority of the roads and crossings are located on private lands. The existing roads on DNRC ground mainly would receive use from the lessees.

Effects of the Action Alternative

Improvements designed to reduce, eliminate or mitigate water quality impacts from the existing road system are planned under the action alternative. Partial relocations, installation of surface drainage features and additional mitigation measures would be planned to bring the roads up to standards that fully comply with BMPs. Remedial measures would be implemented at locations that are causing or contributing to erosion of soil and impacting water resources.

Some short-term impacts to water quality may occur due to sediment introduced at stream crossings and ephemeral draw bottoms during or shortly after construction activities. Application of BMP's and site specific designs and mitigation measures would reduce erosion and potential water quality impacts to an acceptable level as defined in the water quality standards.

Improvements to the existing road system are expected to result in long-term improvements to downstream water quality and improved protection of beneficial uses in all of the affected watersheds. There is little risk of adverse impacts to beneficial uses (i.e. irrigation) occurring as a result of the proposed action (Gary Frank, Hydrology Report, Project file)

3.3.3. Concern that the proposed action may adversely affect bull trout and westslope cutthroat trout.

Affected Environment: Bull Trout and Westslope cutthroat trout

Fisheries surveys were completed within the proposed sale area on the South Fork of Lower Willow creek , by the Deer Lodge National Forest in 1993 and by the Department of Fish, Wildlife and Parks in 1996. Antelope Creek was surveyed, in 1988, by the Department of Fish, Wildlife and Parks. Bull trout

were absent from all of these surveys. Westslope Cutthroat trout were found in all three surveys. A DNRC hydrologist observed Westslope Cutthroat trout in Cottonwood Creek in the project area. These surveys were completed 1-2 miles downstream of the proposed project area.

Effects of the No Action Alternative

Current stream habitat for the trout populations present in the project area would not be affected. Continued sediment delivery to the South Fork of Lower Willow Creek and Cottonwood Creek would occur, mainly at stream crossings.

Effects of the Action Alternative

Improvement to the road systems in the project area, especially around the stream crossing sites and culverts would reduce the amount of sediment delivery to these streams. The proposed timber harvest activities impact to cumulative water yields are considered well below the threshold for the existing channel conditions. No impacts to downstream channel stability or beneficial uses would be expected under this alternative due to increases in peak flows or average annual water yield (G. Frank, DNRC Hydrologist. Project file).

3.3.4. Concern that timber harvest will not consider the recruitment of future old growth. Nor will old growth be protected.

Affected Environment

All stands in the proposed harvest area are in the dry Douglas-fir/Ponderosa pine type. Potential old growth stands were field checked through a fixed area plot cruise to determine if they met old growth definitions. The cruise found that none of the stands met the minimum criteria for old growth designation primarily due to being too young. Although none of the stands currently meet old growth definitions, the proposed harvests are restoration treatments designed to perpetuate stand attributes associated with old growth. For example, no Ponderosa pine trees over 21" DBH would be targeted for removal. It is anticipated less than 25% of Douglas-fir > 21" D.B.H would be removed under the proposal. Due to the restoration type treatment proposed, some stands would likely be expected to move into old growth status within the next 30 years. The current stands in the proposed sale area are believed to have greater basal areas and tree densities than occurred historically over the same area. This is mainly due to the effects of fire suppression, which has allowed high levels of Douglas-fir in-growth.

Effects of the No Action Alternative

The existing stands would remain in their present condition. The Ponderosa pine would be expected to decline as the Douglas-fir out-competes the pine for available nutrients. The risk of beetle infestations to the existing pine would be expected to remain high as well. As they age, some of the stands may move into old growth status, though an increase in ladder fuels, the risk of a high intensity fire, which is believed to have occurred infrequently historically, would be accelerated should a wildfire occur.

Effects of the Action Alternative

Under the action alternative, the proposed treatment would be a restoration type intended to increase the health and vigor of the existing Ponderosa pine. The proposed harvest would seek to modify the stand by

removing much of the encroaching Douglas-fir and thinning the stands to a more historic level. The remaining stand stocking would be at a more historic level, healthier and have a lower risk of stand replacing fire which likely occurred infrequently under natural conditions on this site. The proposed timber harvesting would concentrate on removing approximately 50-60% of the existing basal area from the smaller, suppressed and intermediate trees which would move these stands closer to the densities and structural diversity that occurred under pre-European influences. The treatment would be a mixture of uneven-aged and individual tree selection management techniques, removing most of the less vigorous younger trees. Under the proposal, few of the Ponderosa pine would be removed. No pine greater than 21" DBH would be removed. The pine removed would be smaller pine appearing to be genetically inferior and have a high risk of mortality. Proposed harvest in the Douglas-fir types would be designed to decrease stocking levels and perpetuate old growth. This type of treatment would move the stands closer to a pre-European settlement condition that would have a larger average diameter, retain snags and snag recruits and provide future old-growth potential for this area.

3.3.5. Concern that timber harvesting might adversely impact winter big game populations through loss of thermal cover, security cover and movement corridors.

Affected Environment

Densely stocked thickets of conifer regeneration and overstocked mature stands provide thermal protection and security for elk and deer in winter, which can reduce energy expenditures and stress associated with cold temperatures, wind, and human-caused disturbance. Although thermal cover attributes may be less important for elk than has been thought (Cook et al. 1998), areas with densely stocked mature trees are also important for snow interception, which makes travel and foraging less stressful during periods when snow is deep. Dense stands that are well connected provide for animal movements across wintering areas during periods with deep snow, which improves their ability to find forage and shelter under varied environmental conditions. Thus, removing this "winter cover" that is important for wintering elk and deer through forest management activities can increase their energy expenditures and stress in winter. Reductions in cover could ultimately result in a reduction in winter range carrying capacity and subsequent increases in winter mortality within local elk and deer herds.

Timber harvest can increase elk vulnerability by changing the size, structure, juxtaposition and accessibility of areas that provide security during hunting season (Hillis et al. 1991). As visibility and human access increase within forested landscapes, elk have a greater probability of being observed and subsequently harvested by hunters. Hillis and others (1991) recommended that effective elk security should be composed of nonlinear blocks of mature forest cover (with at least 50% canopy closure) that are at least 250 acres in size and at least one half mile from any open road (Hillis et al. 1991). They also suggested that security cover is lacking if less than 30% of an area is composed of security cover and stated that maintaining connectivity among security areas is important (Hillis et al. 1991). Relationships of security cover and vulnerability for deer are not well known. However, because mule deer are less social than elk, and are smaller, they tend to use smaller patches of cover more effectively. It is generally

assumed that if the security cover needs of elk are met, then those of deer are also met. Further, when elk security is demonstrated to be substantially compromised, adverse effects to mule deer can also be expected (albeit to a lesser degree than for elk). As with elk, affects on deer populations are skewed towards the male segment of the population with regard to security.

All the proposed harvest parcels provide some habitat for elk and several are also used by mule deer (Dan Hook, MFWP, letter dated 10/19/99). However, impacts to elk, and to a lesser extent mule deer winter range conditions, in the Harvey Ridge and Silver King proposed harvest units are the primary concern (Dan Hook, MFWP, letter dated 5/4/00). Therefore, the following effects sections will focus on the impacts to winter and security cover on elk populations within these parcels. Mule deer may be able to utilize smaller patches of winter cover and may benefit more from increased shrub production in post harvest stands with less canopy closure. However to simplify the assessment, the following analysis assumes that the effects to elk winter cover will also apply to mule deer.

Due to the large ranges of elk and the seasonal shifts in habitat use in this area, the area described in the grizzly bear analysis, which roughly coincides with the herd range within this area (excluding winter range areas in the Rock Creek drainage), was used for assessing cumulative effects. Telemetry data as reported by Canfield (1991) indicated that "elk preferred the foothills habitats characterized by a lack of continuous timber…mostly on private ownership". However, she found that "coincident with opening day (of the general elk season), radioed elk made distinct movements up in elevation, away from open roads, and into areas characterized by large blocks of continuous timbered canopy…found in the Silver King Roadless Area". Therefore, the areas within and immediately around the project areas do not appear to be important in providing security cover during the hunting season.

The majority of the elk using the analysis area winter to the west in the Rock Creek drainage (pers. comm. John Firebaugh, MFWP, 2/12/02. pers. comm. Mike Thompson, MFWP, 2/12/02). Elk are known to use the area within and immediately around the project areas during the fall and early spring, and, although telemetry sampling was not designed around assessing winter use, anecdotal relocations indicated that few elk wintered in this area (pers. comm.., Mike Thompson, MFWP, 2/12/02). However, some elk from this herd are known to winter to the east of the analysis area in the lower reaches of Lower Willow Creek (pers. comm., John Firebaugh, 2/12/02). The project areas are located in the upper reaches of Lower Willow Creek at relatively high elevations for wintering elk during severe weather conditions. Therefore, there is the potential for use of these areas by wintering elk, but the low number of elk, the isolated nature of the project areas, and the relatively high elevation of these areas would likely result in limited use by elk during severe winter conditions.

The Silver King parcel provides approximately 405 acres of multi-storied Douglas-fir and ponderosa pine mature forest that would currently function as effective winter cover. Although stand characteristics would also provide effective hiding/escape cover, the area does not qualify as security cover for elk since the parcel is within half a mile of the open road to the north. The cover conditions within the immediate area around the parcel are very limited due to intensive harvesting on private lands adjacent to the parcel

and the prevalence of grassland/xeric shrubland habitats. However, Forest Service lands to the west (approximately 2-3 miles) provide large areas of security cover. Security cover in 1991 was reported as 57% for the Harvey-Willow herd unit boundary (Canfield 1991) and land designations (road less area status) and very limited harvest activity has occurred in this area since then to reduce security. Therefore, from an elk security standpoint, it would appear that the project area would provide some hiding cover in the fall, however elk likely utilize more secure areas in the western portion of the analysis area during the hunting season.

The Harvey Ridge parcel provides approximately 500 acres of multi-storied Douglas-fir and ponderosa pine mature forest that would currently function as effective winter cover. This parcel also functions as security cover due to the closure of the Cow Creek county road, which has been otherwise open to public access in the past. Forest Service lands to the west and southwest provide large amounts of effective security cover. The winter cover conditions within the immediate area around the parcel are very limited due to intensive harvesting on private lands adjacent to the parcel and the prevalence of grassland/xeric shrubland habitats.

Effects of No-Action Alternative

Without the proposed understory thinning harvests, large ponderosa pine would continue to experience competition with encroaching Douglas-fir, leading to continued, and potentially accelerated mortality of the largest size class of ponderosa pine. However, high levels of vertical structural diversity and canopy closure composed of suppressed, intermediate, codominant, and dominant Douglas-fir would likely continue in both the Silver King and Harvey Ridge parcels.

Under the No-Action Alternative, the Silver King parcel would continue to provide effective winter cover, however the open road to the northwest would reduce the value of the parcel from a vulnerability standpoint. The Harvey Ridge parcel would continue to provide effective winter cover as well as security cover.

Within both the Silver King and Harvey Ridge parcels, no road construction and reconstruction would occur under the No-Action Alternative and therefore human access would not be affected thus minimizing the potential for higher elk vulnerability to fall hunter harvest and winter disturbance.

If no harvest occurs as proposed under the Action Alternative, there would be a continued, and potentially increasing risk of insect infestations and/or stand replacing wildfire which, depending on the severity of the disturbance, could remove winter cover. Consequently, there would be no short term direct or indirect effects to winter and security cover as a result of adopting the No-Action Alternative, however there could be long term negative effects as a result of conditions within the proposed harvest units becoming more susceptible to stand replacing disturbances.

Cumulative Effects of the No-Action Alternative

Although security cover within the area immediately adjacent to the project areas is limited due to intensive harvesting on private lands and the adjacency of grassland/xeric shrub cover types, it is readily available to the west on Forest Service lands. The Harvey Ridge parcel is the most connected with these

large blocks of mature/old forest types on Forest Service lands to the west. Winter cover is also limited within the area adjacent to the project area, however most elk winter in other areas and the potential for use by large numbers of elk during extreme weather conditions is low. There is a low risk of reductions in security cover on these lands as they are mostly located within a roadless area and no planned harvest activities are currently known. Therefore, over the short term there would be no cumulative effect to elk. However, the increased potential for wildfire disturbance within the proposed harvest units would result in a long term cumulative risk of stand loss, which could have indirect adverse consequences to the local wintering elk herd should the stands burn.

Effects of Action Alternative

The proposed harvest in the Silver King parcel would result in reductions in winter cover of approximately 70% from 500 acres to approximately 150 acres. In addition, hiding/escape cover will also be reduced to approximately 150 acres which will result in a negative effect to elk. The reductions in canopy closure and the removal of vertical structural diversity will affect the snow intercept characteristics of the proposed harvest stands, thereby potentially increasing the winter stress on elk utilizing these stands in severe winter conditions (i.e. cold temperatures and heavy snow accumulations). In addition, the removal of horizontal screening cover will reduce the hiding cover within this parcel, potentially increasing the vulnerability of elk to hunter harvest and possibly increasing the physiological stress on wintering animals. However, the fact that elk tend not to use this area during hunting season (Canfield 1991) reduces the effect of the hiding cover issue. In addition, the relatively high elevation of the Silver King parcel and the high proportion of elk that utilize areas to the west, in the Rock Creek Drainage for wintering, reduce the likelihood that elk will use the area within and around the project area appreciably during severe winter conditions.

To further mitigate the effects from reductions in winter and hiding cover, several measures were developed within the harvest plan for the Silver King parcel. No-harvest areas would be maintained along the southern and eastern edges of harvest unit 1. The retention along the southern and western edge would provide some effective winter cover, as well as screening and escape cover for big game in the vicinity of the open road. The no-harvest area in the eastern edge of the proposed harvest unit would be a block of contiguous cover of approximately 17 acres that would provide winter cover (i.e. snow intercept, winter security).

The proposed harvest in the Harvey Ridge parcel would result in reductions in winter cover of approximately 78% from 405 acres to approximately 90 acres. In addition, security cover will also be eliminated since the residual stands would not meet the 250 acre minimum size requirement in Hillis et al. 1991 and would be altered to a condition that would provide approximately 90 acres of hiding cover. These actions would result in a negative effect to elk. As in the Silver King parcel, the reductions in canopy closure and the removal of vertical structural diversity will affect the snow intercept characteristics within stands, thereby potentially increasing the winter stress on elk utilizing these stands in severe winter conditions. In addition, the removal of canopy closure below the 50% threshold for a majority of the

proposed harvest area would eliminate the security cover within the harvest unit by reducing the acreages below the 250 acre threshold. However, the fact that elk tend not to use this area during hunting season (Canfield 1991) reduces the effect of the hiding cover issue. In addition, the relatively high elevation of the Harvey Ridge parcel and the high proportion of elk that utilize areas to the west for wintering, reduce the likelihood that elk will use the area within and around the project area during severe winter conditions.

To further mitigate the effects from reductions in winter and hiding cover, several measures were developed within the harvest plan for the Harvey Ridge parcel. No-harvest areas would be maintained in the northwest (65 acres), northeast (57 acres), and southeast (45 acres) corners of the parcel. Of these no-harvest areas, the block in the northwest corner would provide the most effective hiding cover since it is adjacent to and directly connected to a large block of dense, mature forest cover on U. S. Forest Service land, however it is composed of lodgepole pine which would not function has high quality winter cover. The no-harvest blocks in the southeast and northeast are of less value for hiding cover, since they would, if the Action Alternative were adopted, be less connected to winter and security cover on U.S. Forest Service lands to the west and they are both characterized by more open forest conditions that may not provide optimal winter cover conditions. These proposed no-harvest blocks would be too small to qualify as security cover, unless the connectivity of the block in the northwest corner with the large block of security cover on U. S. Forest Service lands were taken into account. The block in the northeast corner has relatively low canopy closure (somewhat less than 50%), which reduces its value as winter cover. Hiding and, to a certain extent, winter cover values would be benefited in the areas where reduced harvest intensity would be applied along ridge features that connect these no-harvest patches. Maintaining this connectivity should facilitate movement of big game between no-harvest areas and between the parcel and more secure Forest Service lands.

Approximately 1.4 miles of new road, and 0.4 miles of temporary road would be constructed within the Silver King parcel, while approximately 0.5 miles of temporary road would be constructed within the Harvey Ridge parcel. Increases in human access through increased road densities can increase elk vulnerability to hunter harvest and the potential for disturbance of wintering animals. Therefore, the proposed road building activities as proposed in the harvest plans for the Silver King and Harvey Ridge parcels could effect elk during general hunting season and in the winter. However, efforts to reduce the potential of human use of these roads after harvest would minimize the potential effect. All new roads would be revegetated and closed via slash, earthen berms, or gates to minimize unauthorized vehicle traffic. Temporary roads on the Silver King parcel would be recontoured, while portions of the temporary road on the Harvey Ridge parcel would be recontoured.

The proposed harvests in the Silver King and Harvey Ridge parcels are designed as restoration treatments designed to retain some level of structural diversity and reduce risks of catastrophic disturbances such as stand replacing wildfire. Although the potential for stand replacing fire events is speculative, it is reasonable to assume that unthinned stands within these parcels will continue to build forest fuels as minor disturbances such as tree competition and insect infestations continue to cause tree mortality. Since a stand

replacing fire would remove any winter or security cover, the proposed harvest treatments likely have some long term benefit to reducing elk vulnerability. This effect is especially important as adjacent stands on other ownerships recover and begin to provide additional cover values for big game species.

The overall adverse effects of the proposed harvest treatments on the Silver King and Harvey Ridge parcels would be minor due to the relatively small number of animals affected and treatment types that would be implemented that were designed to maintain important cover attributes and functional placement.

Cumulative Effects of Action Alternative

Winter and security cover within the area directly adjacent to the project areas is relatively limited due to intensive harvesting on private lands and the prevalence of grassland/xeric shrub cover types within the analysis areas. The Harvey Ridge parcel is the most connected with large, Section-sized blocks of mature/old forest types on Forest Service lands to the west. Therefore, within the area immediately adjacent (within a mile) to and within the project areas, the proposed harvest treatments would remove a high percentage (70 to 78%) of the remaining winter cover and, on the Harvey Ridge parcel only, security cover. However, when viewed from the larger analysis area, the relatively contribution of security cover is very small when the expansive security cover to the west is considered, and hence the cumulative effects of its removal from the Harvey Ridge parcel is minor. From the standpoint of winter cover, the Silver King and Harvey Ridge parcels are not situated in areas that are heavily used by a large proportion of the elk in this herd. Most elk winter in the Rock Creek drainage to the west or in areas further down in elevation to the east of the project areas. In addition, proposed measures to retain some level of cover for winter and hiding cover within harvest units will further reduce these effects. Therefore, the negative cumulative effects of removal of winter cover in this area are minor.

The proposed harvest treatments will potentially reduce the risks of stand replacing wildfire within the analysis area by reducing fuel loads and risks from disturbance agents. If stands proposed for harvest, especially Harvey Ridge and Silver King, suffered stand replacing fires, winter and security cover would be greatly reduced in the analysis areas. Although speculative, and somewhat dependent on stochastic factors, a fire disturbance to the proposed harvest units could result in a long term cumulative effect by reducing winter and security cover within the analysis areas. The scale of this effect would depend on the relative increases in disturbance likelihood and the actual intensity and extent of any disturbance. Therefore, the proposed treatments could create more stable winter and security cover, albeit reduced from existing conditions within the analysis areas. This effect, coupled with the potential for recovery of cover values on adjacent lands, could result in the long term reduction of potential negative cumulative effects.

Staedler, Fred

To: Hobson, Jason
Subject: RE: New Service Forester

Hi Jason

The new Headwaters RC&D forester is Chris Town. He will be starting on Monday March 4th. We have hired Bob Andreozzi to spend a week with Chris getting him started. When the week is up we may take you up on your offer.

Thanks Fred

-----Original Message-----
From: Hobson, Jason
Sent: Wednesday, February 27, 2002 12:41 PM
To: Staedler, Fred
Subject: New Service Forester

Hi Fred:

I don't think I have gotten a chance to meet you yet but let me introduce myself. My name is Jason Hobson and I have recently been hired as the Private Forestry Assistant Specialist.

In speaking with Chris Tootell he informed me that you have a new Service Forester starting in early March. I want to extend an invitation to use me in your training of your new hire in any way you see fit.

As you may already know the Service Forestry group is in the planning stage of our Spring Round-Up slated for May, 22-24th in Columbia Falls. Marc Hughes and are doing the bulk of the planning and the agenda . We definately would like to get the new-guy there for the meeting.

Thanks for your time and have a great day!

Sincerely,

Jason M. Hobson
DNRC PFA Specialist

APPENDIX D

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APPENDIX E
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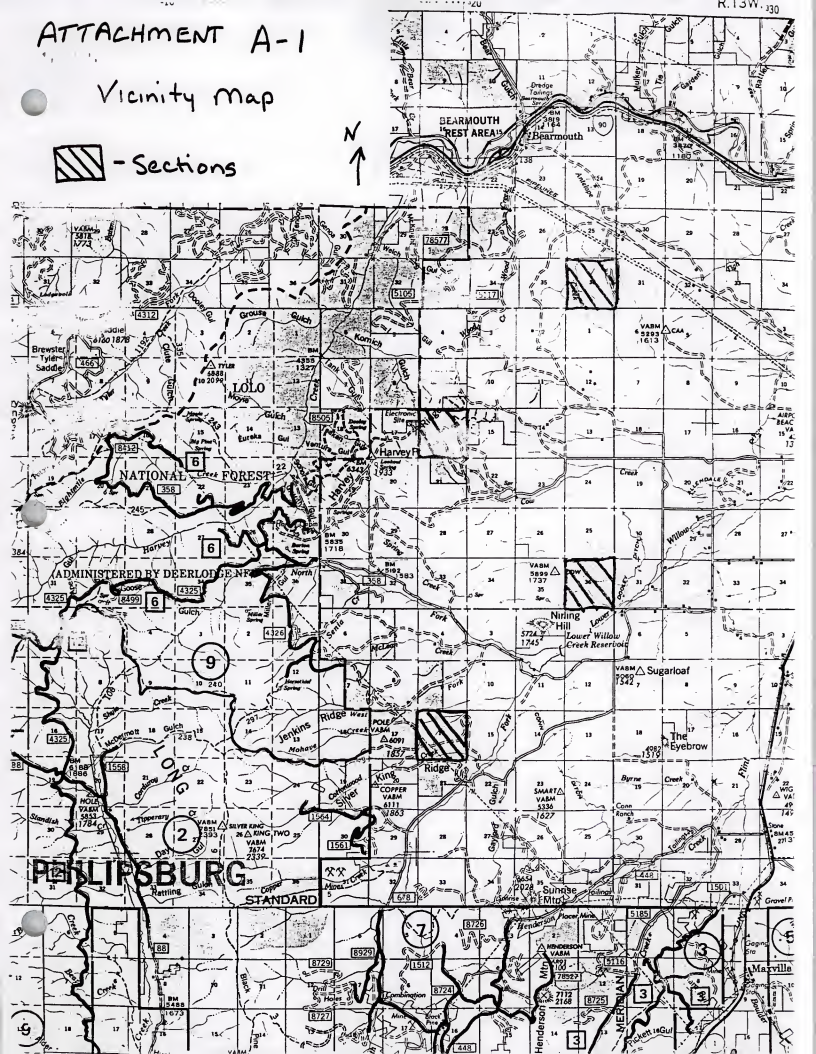
ATTACHMENT A-1

Vicinity Map

- Sections



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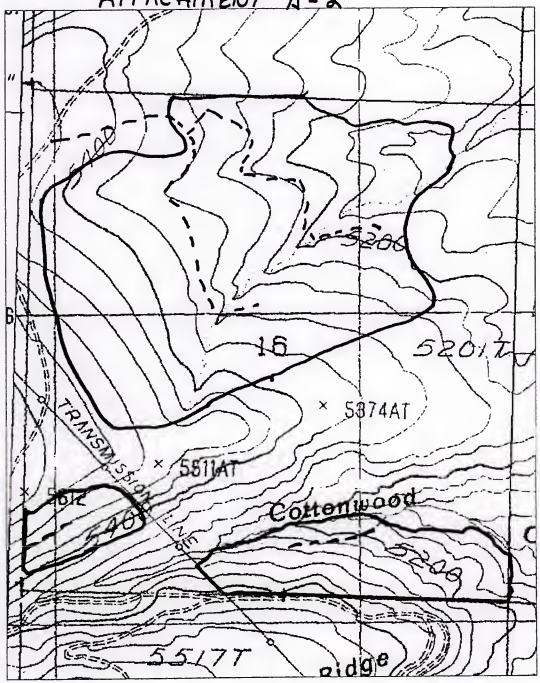

Silver King T9N, R14W, Section 16

- - - - NEW ROAD

Universal Transverse Mercator
12 North
NAD 1927 (Conus)

N

Scale 1:12500
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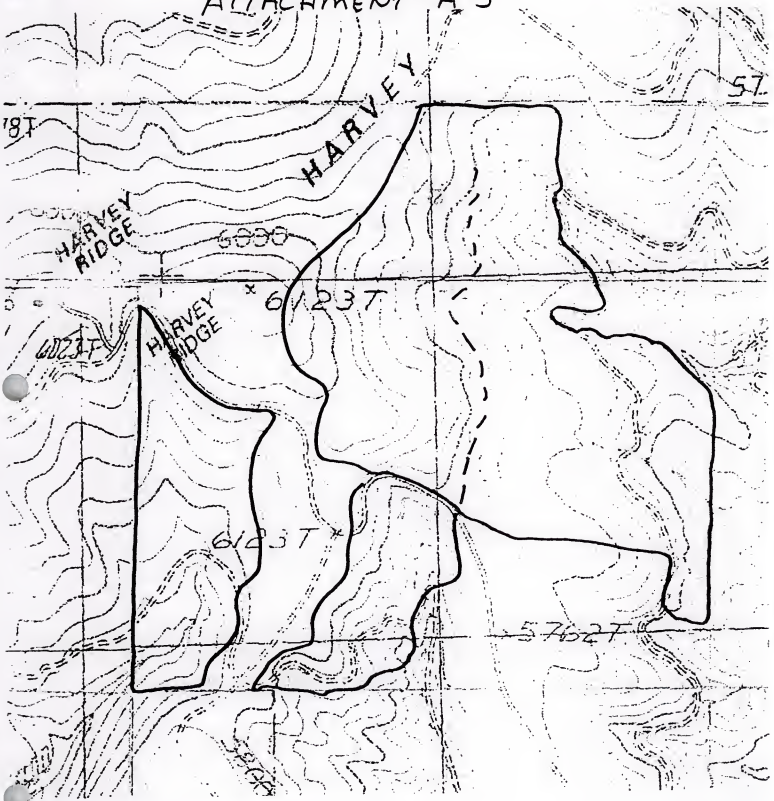
Feet

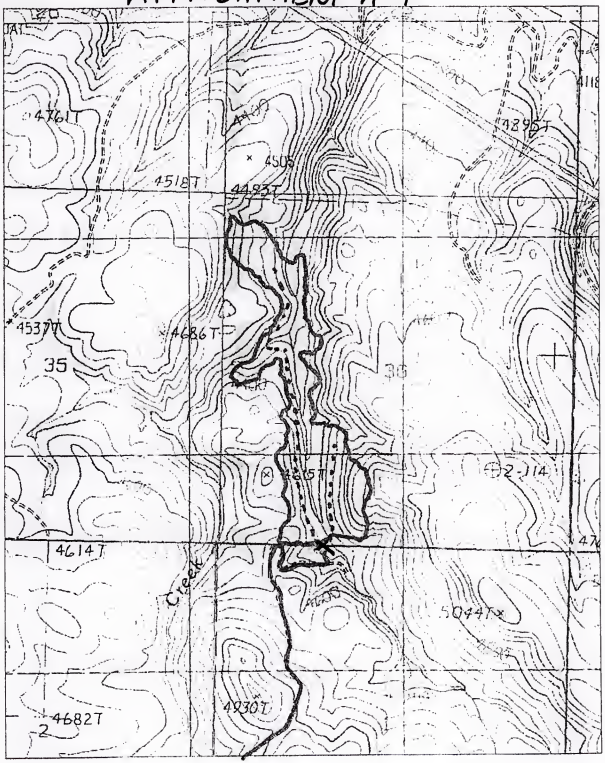
unit2.ssf
2/8/2002
Pathfinder Office
Trimble

HARVEY RIDGE
TION R14W S.16
ATTACHMENT A-3



— — — Temp road

ATTACHMENT A-4



X Closure

---- New Road

ANTELOPE SECTION

T11N, R14W, S 36

Universal Transverse Mercator
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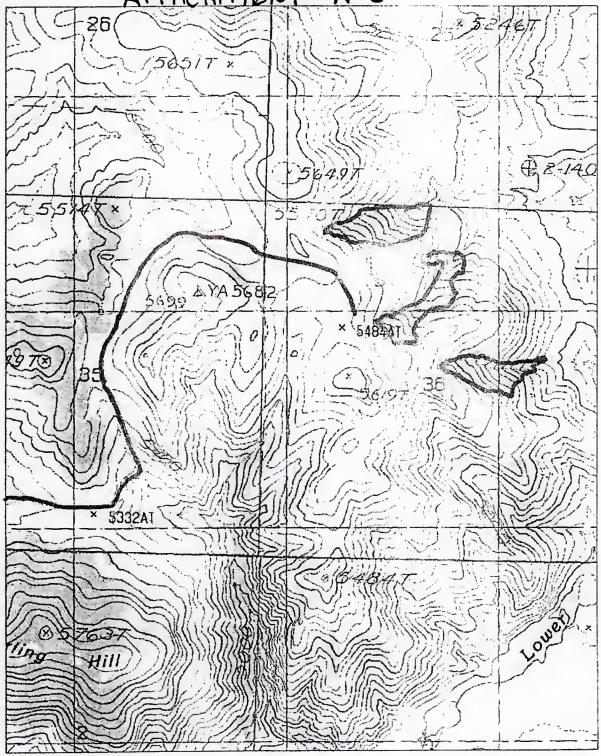
Feet

r050115a.cor
8/20/2001
Pathfinder Office
Trimble

ATTACHMENT A-5



NIRLING HILL

T10N R14W S36

Universal Transverse Mercator
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N

Scale 1:20000
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Feet

Multiple Files
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Pathfinder Office
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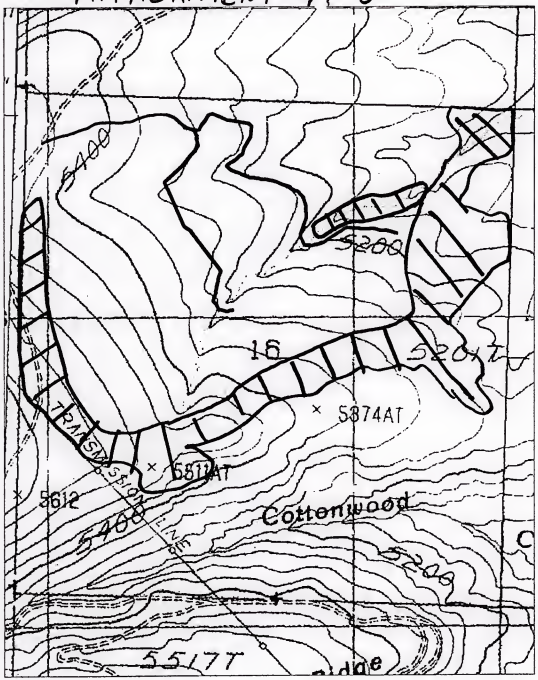
ATTACHMENT A-6



Silver King Mitigation Areas (No Harvest)

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NAD 1927 (Conus)

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Scale 1:12500
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Feet

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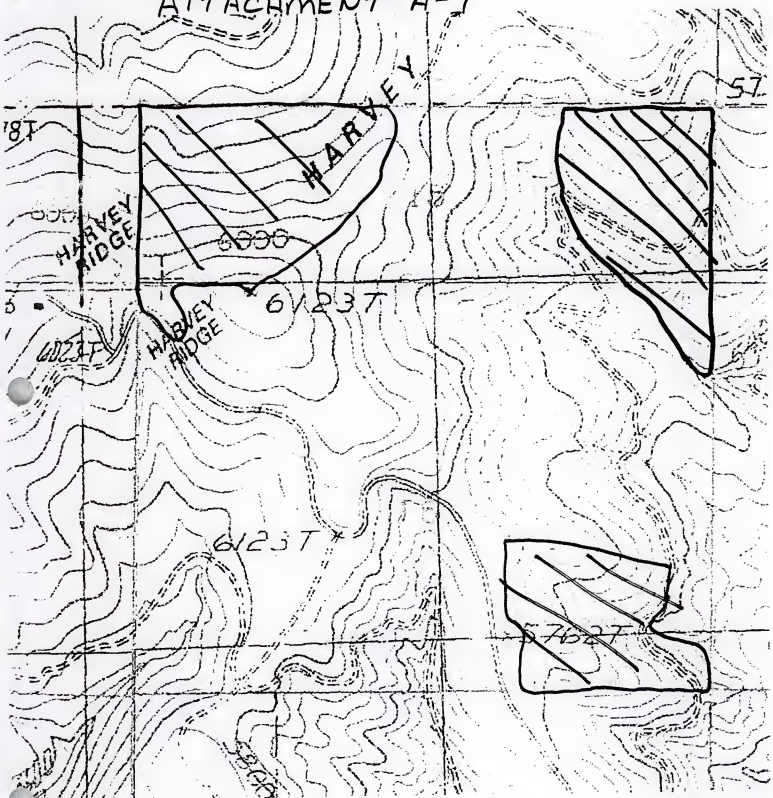
2/8/2002
Pathfinder Office
Trimble

HARVEY RIDGE
TION R14W S.16

ATTACHMENT A-7



Harvey Ridge Mitigations (No Harvest)

STATEMENT OF FINDING

Silver King/ Harvey Ridge
Environmental Analysis

2-19-02

I. Selection of an Alternative

The Montana Department of Natural Resources and Conservation (DNRC), Anaconda Unit has proposed to harvest approximately 4 million board feet (MMBF) of sawlog timber from 4 separate sections of trust land. The proposed sale area is located between 5 and 8 air miles west of Hall, Montana in Sections 16, T9N, R14W (Silver King) Sections 16 and 36, T10N, R14W (Harvey Ridge and Nirling Hill), and Section 36, T11N, R14W (Antelope) located in Granite County.

The State of Montana's ownership in these tracts is 2,560 acres. The action alternative proposes to harvest up to 830 acres of timberland within this ownership. The State's land is intermixed with private ranches, and industrial timberland throughout this area. All of the state tracts are leased to various ranches for grazing. All four of the state owned tracts are accessed by low standard roads, which are controlled by the adjacent private landowners.

The access to these tracts is controlled by the Skaw, Radtke, Wallace and McGowan Ranches along with Plum Creek Timber Co. DNRC has recently obtained permanent easements to cross a portion of these owners. Most of the roads within this area have surface water drainage, and culvert installation problems.

The silvicultural treatments proposed for the action alternative call for uneven-aged management replicating a light to moderate ground fire occurrence. Emphasis is being placed on keeping larger diameter trees to maintain structural and species diversity, encourage ponderosa pine regeneration and the regeneration of other seral species such as aspen and willows.

If the action alternative is selected, the first sale (Silver King) would be sold in fiscal year 2002 and would take approximately 2 years to complete harvesting. It would also take an additional 2 years to compete the associated fuels management work. In fiscal year 2004 the second sale, (Harvey Ridge/Antelope) would be sold requiring approximately the same amount of time to complete as discussed for Silver King. When market conditions allow, Nirling Hill would be sold.

II. Objectives

In order to meet the goals of the management philosophy adopted through programmatic review in the State Forest Land Management Plan, the Department has set the following specific project objectives:

a. Harvest 3.4 to 5.0 MMBF of timber to provide continuing income for the Montana School Equalization Account (hereafter referred to as the School Trust) in a manner consistent with sustained-yield management principles.
b. Promote long-term production of timber for generating revenue to the School Trust.
c. Maintain the DNRC ownership in an ecological condition, which is sustainable and provides for a wide variety of resources to generate future income.
d. Return the stands to stocking levels and fuel loads closer to historical levels, creating healthier more stable stands.

III. Decisions to be made

The following decisions are to be made as a result of this Environmental Assessment:

a. Do the alternatives presented meet the stated project objectives?
b. Which alternative should be selected?
c. Does the selected alternative have significant impacts on the environment?
d. Is there need for preparation of an EIS?

IV. Scoping, Public Involvement

Comments from the general public and specialists (from inside and outside DNRC) were solicited as part of this E.A. Public notices were posted in the Hall Post Office, Drummond Wagon Wheel Café, and Philipsburg Sunshine Station. A legal notice was also placed in the weekly Philipsburg Mail newspaper.

V. Issues and Mitigation

Issues were identified from concerns and comments expressed by individuals, special interest groups, plus internal and external agency specialists. The following issues were identified and studied in detail in the E.A. Another 8 concerns were identified and addressed in Chapter 2. These concerns were not carried through Chapters 3 and 4.

A. Concern of possible impacts to Threatened, Endangered and Sensitive Species (TE&S).

1. The potential impacts associated with both the action and no action alternatives were analyzed for the following species: Bald Eagle, Grizzly Bear, Gray Wolf, Lynx, Flammulated Owl, Pileated Woodpecker, Boreal Owl, Fisher, Black-backed Woodpecker, Peregrine Falcon, Ferruginous Hawk, Coeur d'

Alene Salamander, Common Loon, Harlequin Duck, Mountain Plover, Townsend's Big-eared Bat, Northern Bog Lemming, and Columbian Sharp-tailed Grouse. There are no significant impacts anticipated under the action alternative if the following mitigation measures were to be implemented.

A. Threatened and Endangered Species

Bald Eagle - No known nesting bald eagles occur on any of the proposed harvest parcels. The only known nest site is over 2 miles from the closest proposed harvest.
No mitigation measures necessary.

Grizzly Bear – The parcels involved with the action proposal are not within a designated Recovery Zone, and are not likely to be occupied by bears in the near term.

a. All roads within the harvest areas will be closed after use by a gate, earth berm or slashing.
b. Some level of cover would be retained in all units, with effective cover being maintained in some portions of the harvest units, especially riparian and leave patches.

Gray Wolf - There are no documented denning sites or known consistent use of the project area.

a. Wolf status, primarily focused on wolf denning activity within the analysis area, will be reconfirmed prior to initiating harvest activity with the appropriate personnel in the U.S. Fish and Wildlife Service.
b. If a wolf den is identified within one mile of any proposed activities, operations would cease and a DNRC biologist would be contacted immediately.

Lynx – The forest types found in the project areas are dominated by warm, dry vegetation and stands composed primarily of dry Douglas fir, ponderosa pine and some lodgepole pine. It is not likely that lynx will effectively use the project areas for breeding and foraging, some transient occurrence is possible.
No mitigations.

B. Sensitive Species

Flammulated Owl

a. Retain cover along riparian areas.
c. Retain cover retention patches.
d. Retain large ponderosa pine (>21").
e. All snags, which are not a safety hazard, will be retained.

Pileated Woodpecker

a. Retain all large (over 21" dbh) ponderosa pine.
b. Retention of all snags, except when a safety hazard.
c. Retention of areas with no or very little harvesting such as riparian areas and connectivity/cover patches.

Boreal Owl
No Mitigations

Fisher

a. Retention of areas with no or very little harvesting such as riparian areas and connectivity/cover patches.
b. Retention of snags and coarse woody debris, large green cull trees and all large (>21" dbh) ponderosa pine trees

Black-backed Woodpecker
No Mitigations

Peregrine Falcon
No Mitigations

Ferruginous Hawk

a. Suitable nesting trees would be retained in the harvest units.
b. Detections of Ferruginous Hawks would be investigated to ensure that nest activity is not occurring and that any active nest would not be disturbed by harvest activities.
c. If a nesting Ferruginous Hawk is detected near areas of project related activities, operations would cease and a DNRC biologist would be contacted immediately to develop site specific mitigations

C. **Other Sensitive Species**

a. Coeur d' Alene Salamander-No Mitigations.
b. Common Loon-No Mitigations.
c. Harlequin Duck-No Mitigations.
d. Mountain Plover-No Mitigations.
e. Townsend's Big-eared Bat-No Mitigations.
f. Northern Bog Lemming-No Mitigations.
g. Columbian Sharp-tailed Grouse-No Mitigations.

B. Concern that the proposed action may cause stream sedimentation, which could adversely affect water quality.
   1. Bring existing Roads up to BMP standards and ensure new roads comply with these standards.

C. Concern that the proposed action may adversely affect Bull Trout and Westslope Cutthroat Trout.
   1. Bring existing roads up to BMP standards and ensure new roads comply with these standards.

D. Concern that timber harvest will not consider the recruitment of future old growth. Nor will old growth be protected.
   1. No ponderosa pine trees over 21" DBH would be targeted for removal.

E. Concern that timber harvesting might adversely impact winter big game populations through loss of thermal cover, security cover and movement corridors.
   1. (Silver King) - No harvest areas would be maintained along the southern and eastern edges of Harvest Unit 1.
   2. (Silver King) - A no harvest area, approximately 17 acres, would be retained in the eastern edge of the proposed harvest unit.
   3. (Harvey Ridge) – No harvest areas would be maintained in the northwest (65 acres), northeast (57 acres) and southeast (45 acres).
   4. All new roads would be revegetated and closed via slash, earthen berms, or gates to minimize unauthorized vehicle traffic.

F. Concern about cumulative effects of the proposed action.
   See above listed mitigations.

G. Mitigation measures adopted for concerns dealt with in Chapter 2.
   1. No ground skidding would occur on slopes greater than 45%.
   2. Skid trail planning in sensitive areas and rehabilitation (i.e. installation of waterbars, slashing, and reseeding).
   3. Landings and heavily used skid trails would have adequate drainage installed and be reseeded with an approved mix of weed free seed.
   4. Skidding would be restricted to dry soil conditions, <20% moisture content at a depth of 6", or frozen conditions.
   5. March 1 to June 1 seasonal operating restrictions.
   6. Coarse woody debris and fines would be retained throughout harvest units to further reduce soil effects and provide for nutrient cycling.
   7. (Nirling Hill section) For sensitive plant species restrict skidding on ridges to designated single trails.
   8. To reduce the potential for spread of noxious weeds, off road equipment would be power washed and inspected prior to moving onsite.

9. Spot applications of herbicides for weed control in the project area would be conducted as needed.
10. Obstruction of temporary and new roads with slash, earth berms, or gates.
11. Maintenance on both open and closed roads would be monitored by direct inspections of road and drainage structures every five years.

H. General mitigation measures for the action alternative not already identified.
1. If any threatened, endangered or sensitive wildlife species were encountered during project planning or implementation, project related activities would cease until a DNRC wildlife biologist and the project leader determined if additional habitat protection measures are needed.
2. If an active owl nest or other raptor were encountered, a DNRC biologist would be contacted and additional mitigation measures may be implemented.

VI. Alternatives

No Action

This alternative would retain all current tree cover and would result in declining individual tree growth and vigor. Seral species such as ponderosa pine and aspen would continue to decline as Douglas fir canopy cover increased. An increasing chance of stand replacing wildfire, with subsequent loss of revenue to the School Trust, could also occur as ladder fuel loads increase. An increase in susceptibility to insect and disease outbreaks would be expected as well with the no action alternative.

No new roads would be built and existing substandard roads and drainage features would not receive remedial measures to decrease sediment delivery to watercourses.

Existing management activities would continue. Timber harvest revenues to the School Trust associated with the no-action alternative would not be realized at this time.

Action

The action alternative would consist of two sales, selectively harvesting approximately ½ to ⅔ of the existing volume. Preliminary estimates are approximately 4 MMBF from approximately 830 acres. Road maintenance would be accomplished on approximately 13 miles of existing road. Approximately 2.6 miles of new construction would be required to access the proposed treatment areas. Approximately 1 mile of temporary road would also be built. Upon

completion, the temporary road and new construction would be slashed, revegetated and portions returned to slope.

Harvesting would target the smaller diameter second growth trees with some larger, less healthy trees also designated for cutting. Stands within these sections are believed to be best suited for ponderosa pine, but due to the absence of fire, Douglas fir makes up 85% of the stands. Existing pine are being out competed for available moisture and nutrients. Maintenance, restoration and regeneration of ponderosa pine would be a major goal of this alternative.

The action alternative would include reconstruction/reconditioning of access roads on private lands to bring them in compliance with BMP's. New road construction would be minimized, by using temporary roads, where possible.

It is anticipated that this alternative would generate approximately $800,000 for the School Trust.

VII. Selected Alternative

After reviewing the Environmental Analysis and supporting documents pertaining to this proposed timber sale, I have decided to proceed with Alternative B, the action alternative. I have selected this alternative for the following reasons.

- The four tracts of ground are currently generating revenue from grazing leases amounting to a combined total of $2,786 annually. Under the no action alternative there would be little change in this revenue stream. The action alternative would generate approximately $800,000 in revenues. This income would be in addition to revenues already being received for grazing leases.

- The action alternative emulates a low intensity, mixed severity fire regime. This regime encourages regeneration of ponderosa pine along with improving the stability of stands and facilitating long term productivity of the timber resource within this section.

- Best management practices would be installed on the road system, improving its current condition and reducing sediment delivery to streams. Trees in many different diameter classes will provide vertical structure and diversity for ecological considerations. There would also be an increase in levels of seral species such as aspen, willow, shrubs and herbaceous species after harvesting which will enhance species diversity and abundance.

- The existing stand is overstocked when compared to historical stand densities. Exclusion of fire has allowed Douglas fir to take over the species mixture on 3 of the 4 tracts. Overstocking created by the fir

encroachment is not in sync with historical data and research. While ponderosa pine has historically been a component of these stands, it appears to have made up a larger proportion of the species composition then it currently does. Under the action alternative, Douglas fir would be harvested more heavily then ponderosa pine in an effort to emulate historical conditions, along with improving tree and stand vigor.

VIII. Finding

After reviewing the information provided in this environmental assessment I conclude that no significant impacts will occur from implementation of Alternative B, action alternative. There is no need for an environmental impact statement. While this alternative will modify the vegetative components within these three tracts of land, the changes will be toward conditions which more approximate those present prior to settlement by Europeans while generating substantial income for the School Trusts. This alternative meets the objectives identified at the beginning of the E.A. better than the No Action Alternative. **Alternative B is the selected alternative.**

IX. Execution

Upon execution this finding becomes part of the Final Environmental Assessment for the Harvey/Silver King Timber Sale.

Date: 2-19-02 Signature: J. J. Steele Jr.